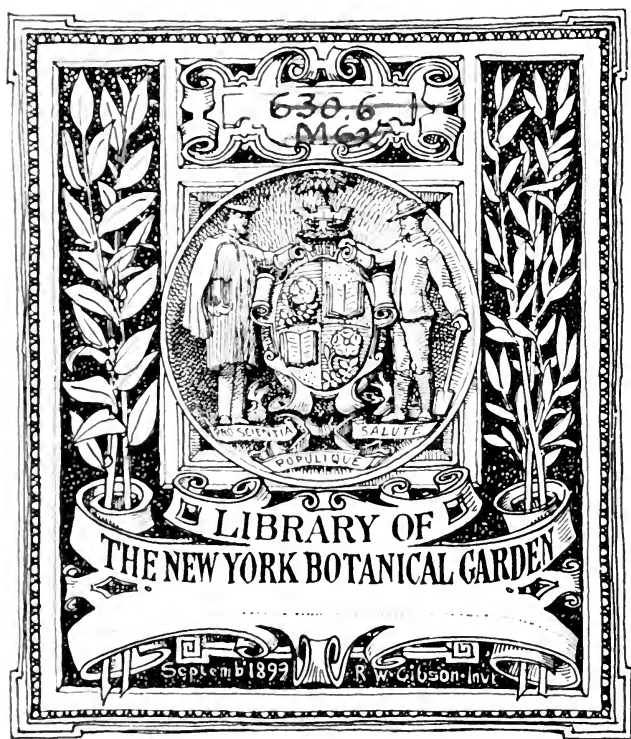
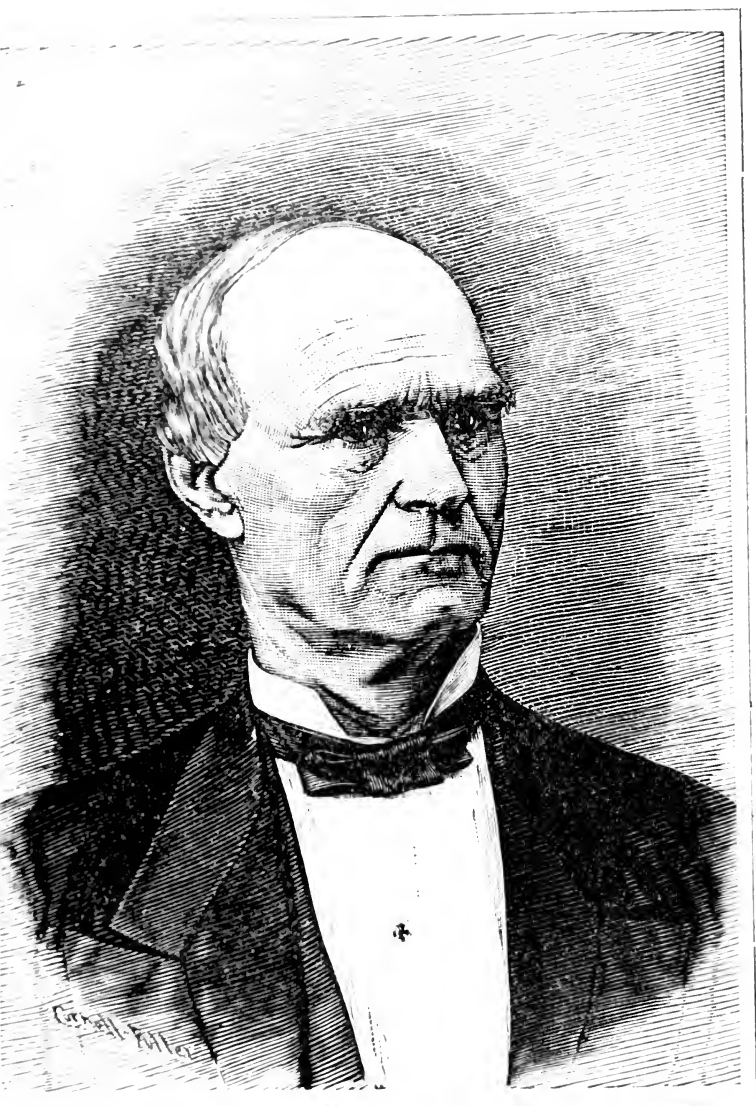


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1879





T. T. LYON.

President of the State Pomological Society.

NINTH ANNUAL REPORT
OF THE
S E C R E T A R Y
OF THE
STATE POMOLOGICAL SOCIETY
OF
M I C H I G A N.

1879.



BY AUTHORITY.

LANSING:
W. S. GEORGE & CO., STATE PRINTERS AND BINDERS.
1880.

1879

REPORT OF THE SECRETARY
OF THE
MICHIGAN STATE POMOLOGICAL SOCIETY.

GRAND RAPIDS, Michigan, December 31, 1879.

TO CHARLES M. CROSWELL, *Governor of the State of Michigan:*

I have the honor to submit herewith, in compliance with legal requisition, the accompanying Report of 1879, with supplementary papers.

Respectfully yours,

CHAS. W. GARFIELD,
Secretary of the Michigan State Pomological Society.

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OFFICERS OF THE STATE POMOLOGICAL SOCIETY FOR 1880.

PRESIDENT—T. T. LYON, South Haven.

SECRETARY—CHAS. W. GARFIELD, Grand Rapids.

TREASURER—S. M. PEARSALL, Grand Rapids.

EXECUTIVE COMMITTEE.

W. K. GIBSON, Jackson, 1 year.

E. F. GUILD, Saginaw, 1 year.

S. B. MANN, Adrian, 2 years.

C. R. CORYELL, Jonesville, 2 years.

JAS. SATTERLEE, Greenville, 3 years.

N. CHILSON, Battle Creek, 3 years.

STANDING COMMITTEES.

ON FRUIT CATALOGUE—T. T. LYON, South Haven, Chairman; GEORGE PARMELEE, Old Mission, for Northern Lake Shore; W. A. BROWN, Stevensville, for Southern Lake Shore; H. DALE ADAMS, Galesburg, for Central Michigan; I. E. ILGENFRITZ, Monroe, for Eastern Michigan; B. W. STEERE, Adrian, for Southern Michigan.

ON FINANCE—N. CHILSON, E. F. GUILD.

ON METEOROLOGY—ROBERT F. KEDZIE, Lansing.

ON ENTOMOLOGY—ALBERT J. COOK, Lansing.

VICE PRESIDENTS.

A. O. WINCHESTER, Berrien Co.

B. G. BUELL, Cass Co.

J. D. W. FISK, Branch Co.

C. R. CORYELL, Hillsdale Co.

DR. W. OWEN, Lenawee Co.

W. C. STERLING, Monroe Co.

A. C. GLIDDEN, Van Buren Co.

E. BUELL, Kalamazoo Co.

DR. HAUXURST, Calhoun Co.

H. W. DONEY, Jackson Co.

J. D. BALDWIN, Washtenaw Co.

E. W. COTTRELL, Wayne Co.

LYMAN A. LILLY, Allegan Co.

A. C. TOWN, Barry Co.

A. L. STURGES, Ingham Co.

KENDRICK SEXTON, Livingston Co.

C. K. CARPENTER, Oakland Co.

D. B. BRIGGS, Macomb Co.

ALOYS BILZ, Ottawa Co.

WM. ROWE, Kent Co.

W. D. ARNOLD, Ionia Co.

S. S. WALKER, Clinton Co.

J. B. BARNES, Shiawassee Co.

N. A. BEECHER, Genesee Co.

S. B. PECK, Muskegon Co.

JAMES SATTERLEE, Montcalm Co.

W. O. FRITZ, Gratiot Co.

WM. L. WEBBER, Saginaw Co.

J. Q. A. BURRINGTON, Tuscola Co.

C. A. SESSIONS, Oceana Co.

F. J. DOWLAND, Mason Co.

S. W. FOWLER, Manistee Co.

J. J. HUBBELL, Benzie Co.

A. P. GRAY, Grand Traverse Co.

WM. MEBERT, Leelanaw Co.

G. E. STEELE, Antrim Co.

C. F. ROMER, Bay Co.

SHEPARD TIBBITTS, Newaygo Co.

H. E. HOARD, Iosco Co.

C. P. REYNOLDS, Alcona Co.

E. A. LANDPIERE, Emmet Co.

STATE BOARD OF AGRICULTURE.

PRESIDENT--HON. HEZEKIAH G. WELLS, of Kalamazoo.

VICE PRESIDENT--HON. J. WEBSTER CHILDS, of Ypsilanti.

HON. GEORGE W. PHILLIPS, of Romeo.

HON. FRANKLIN WELLS, of Constantine.

HON. MILTON J. GARD, of Volinia.

HON. HENRY G. REYNOLDS, of Old Mission.

CHARLES M. CROSWELL, GOVERNOR OF THE STATE, } *Ex officio.*
THEOPHILUS C. ABBOT, PRESIDENT OF THE COLLEGE, }

SECRETARY--ROBERT G. BAIRD.

TREASURER--EPHRAIM LONGYEAR, of Lansing.

OFFICERS OF THE MICHIGAN STATE AGRICULTURAL SOCIETY FOR THE YEAR 1880.

PRESIDENT—G. W. PHILLIPS, Romeo.

SECRETARY—R. F. JOHNSTONE, Detroit.

TREASURER—A. J. DEAN, Adrian.

EXECUTIVE COMMITTEE.

Terms expire December 31, 1880.

JOS. M. STERLING, Monroe, Monroe Co.

I. H. BUTTERFIELD, St. Clair Co.

E. W. RISING, Davison Station, Genesee County.

WM. BALL, Hamburg, Livingston Co.

CHAUNCEY W. GREENE, Pontiac, Oakland Co.

W. H. COBB, Kalamazoo, Kalamazoo Co.

HENRY FRALICK, G'd Rapids, Kent Co.

A. O. HYDE, Marshall, Calhoun Co.

WM. CHAMBERLAIN, Berrien Co.

PHILO PARSONS, Detroit, Wayne Co.

Terms expire December 31, 1881.

ABEL ANGEL, Bradley, Allegan Co.

D. W. HOWARD, Pentwater, Oceana Co.

H. O. HANFORD, Plymouth, Wayne Co.

F. M. MANNING, Albion, Calhoun Co.

A. F. WOOD, Mason, Ingham Co.

F. V. SMITH, Coldwater, Branch Co.

C. A. HARRISON, Paw Paw, Van Buren County.

J. Q. A. BURRINGTON, Vassar, Tuscola County.

JOHN MCKAY, Cheboygan County.

JOHN GILBERT, Ypsilanti, Washtenaw County.

CONSTITUTION

OF

THE MICHIGAN STATE POMOLOGICAL SOCIETY.

ARTICLE I.—OBJECT.

The object of the Society is to develop facts and promulgate information as to the best varieties of fruit for cultivation in the State of Michigan, and the best methods of cultivation.

ARTICLE II.—OFFICERS.

The officers of the Society shall consist of a President, a Vice President in each county so far as may be deemed necessary or practical; a Secretary, and as many local Secretaries as may be deemed necessary; a Treasurer, and an Executive Committee of six members, exclusive of the President, Secretary, and Treasurer, who shall be members *ex officio*. Of this committee four shall constitute a quorum for the transaction of business at any meeting of said committee: *Provided*, Each member shall have been notified in the usual manner of such meeting. All the above officers to be elected annually by ballot, except the Executive Committee, whose terms of office shall be so arranged that two vacancies shall occur annually.

ARTICLE III.—ANNUAL MEETING.

The annual meeting for the election of officers shall be on the first Tuesday in December in each year; the officers elected at such meeting to commence service on the first of January following.

ARTICLE IV.—EXPIRATION OF TERM OF OFFICE.

The officers shall remain and perform their respective duties until their successors are elected and have accepted, but the regular term of office shall expire on the 31st of December in each year.

ARTICLE V.—TIME OF HOLDING MEETINGS.

The Society may hold a meeting on the first Tuesday of each month, at such place as the Executive Committee shall designate.

ARTICLE VI.—MEMBERSHIP FEE.

Every person who subscribes, or who may subscribe to these articles, and pays to the Treasurer the sum of one dollar per annum in advance, shall be entitled to membership, unless otherwise voted at a regular meeting of the Society.

ARTICLE VII.—DISBURSEMENTS.

No money shall be disbursed except on an order signed by the President and countersigned by the Secretary by direction of the Executive Committee.

ARTICLE VIII.—AMENDMENTS.

These articles may be amended at any regular meeting of the Society, by a majority vote of such meeting, provided one month's notice shall have been given of such amendment.

ARTICLE IX.—AMOUNT OF PROPERTY.

The Society may hold personal and real estate to the amount of twenty thousand dollars.

ARTICLE X.—BY-LAWS.

By-laws may be passed at any regular meeting, but a month's notice may be required.

ARTICLE XI.—TREASURER'S BONDS.

The Executive Committee shall require of the Treasurer such security as they may deem necessary for the safe keeping and proper disbursement of the funds of the Society in his hands.

BY-LAWS.

[Adopted December, 1872.]

SECTION I.—THE PRESIDENT.

1. The President shall be the executive officer of the Society, and of the Executive Board.

2. He shall see that the rules and regulations of the Executive Board are duly observed and enforced, and in the absence of established rules touching particular cases and when beyond the reach of the Executive Board, he shall have power to institute rules, by and with the consent of the Secretary, provided such rules be not in conflict with any established by the Board, subject, however, to the action of the Executive Board at its subsequent meeting.

3. In conjunction with the Secretary, the President shall prepare regularly an order of business for the meetings of the Society.

4. The President shall have the best interests of the Society at heart, and shall lead in forwarding any enterprise that shall add to the use or popularity

of the Association, but shall not have power to act upon any important matter connected with the Society without first consulting the Executive Board.

SECTION II.—VICE-PRESIDENTS.

Any one of the Vice-Presidents shall, in the absence of the President, at any meeting, preside and perform the duties of said office.

SECTION III.—SECRETARY.

1. The Secretary shall be the recording, corresponding, financial, auditing, and accounting officer of this Society.

2. He shall attend all meetings of this Society and Executive Board, and shall keep an accurate and faithful record of the proceedings. He shall sign all certificates of membership, all awarded diplomas, and have charge of the Society's books and papers, and any other property given into his care by the Society, and shall be responsible for the same.

3. He shall also be custodian of the seal of the Society, and affix the same to all important documents.

4. He shall seek by every praiseworthy means to have the meetings of the Society announced in a public manner throughout the State, and shall use every endeavor to have the important proceedings of the Society, as well as the prominent papers, read before the meetings, published, and thus placed in the hands of all the interested inhabitants of the State.

5. It shall be his duty each year to prepare for publication the annual report, the same to contain the exact proceedings of the Society, and such other matter as shall be deemed proper by the Secretary, in conjunction with an advisory committee from the Executive Board.

SECTION IV.—TREASURER.

With the Treasurer shall be deposited all of the funds of the Society, and it shall be his duty to keep an accurate account of the income and disbursements of the Society, and shall be prepared to report the condition of the Society's finances, when called upon to do so by the Society or Executive Board.

SECTION V.—EXECUTIVE BOARD.

1. The Executive Board shall be the judicial body of the Society, and shall enact all laws, rules, and regulations for the government of the Association, shall have full charge of the annual exposition, and shall fix the salaries of the officers.

2. The Board shall have power to displace any officer for neglected duty or abuse of position, and shall fill all vacancies by appointment. This Board shall have four regular meetings during the year, the times and places for the same to be settled by themselves. Other meetings may be called by the President, or a majority of the members of the Board.

3. This body shall consider it their duty to look after the general welfare of the Society; devise new methods of improvement; keep the Society upon a sound financial basis, and provide for every necessity as it shall arise.

4. All measures of importance shall be submitted to this Board, but may be referred back to the Society for final decision.

5. The Executive Board shall make out a report through the Secretary for each meeting of the Society following the regular or special meetings of the Board.

6. The election of the Executive Board shall be arranged as follows: Two members shall be elected for one year, two members for two years, and two members for three years, at the next annual election; after which two members shall be elected annually, the term of office being three years.

SECTION VI.—MEETINGS.

The Society shall have four regular meetings in the year, to be denominated quarterly sessions, the times and places to be decided upon by the Executive Board, they being guided by invitations sent in from different portions of the State.

SECTION VII.—AMENDMENTS, ADDITIONS, ETC.

Any addition or revision of these laws may be made by a two-thirds vote of the members present at any regular meeting of the Society, one month's notice having been given.

SECTION VIII.

This Society, in its regular or special meetings, shall be governed by ordinary parliamentary usages.

PROCEEDINGS OF THE WINTER MEETING,

HELD AT LANSING, FEBRUARY 18TH, 19TH, 20TH, 1879.

The February gathering of Michigan fruit growers is named the winter meeting, and this meeting for 1879 was called at the capitol in Lansing for February 18th.

During the forenoon of the first day, through the assistance of the Superintendent of State Property, a committee of the State Pomological Society arranged in the upper corridor of the capitol a commodious array of tables, and by three o'clock over 250 plates of apples were beautifully spread thereon.

The audience room of the State Pioneer society was secured for the exercises of the association, and at half past three the people in attendance were called to order for a few moments' session. The Secretary read a number of letters from prominent fruit-growers in various parts of this and adjoining States, concerning the promises for fruit, the severity of the winter, etc. The testimony thus given indicated a greater degree of cold in the southern tier of counties in the State than elsewhere, and outside of a few of these southern counties there was a general impression that the tenderest buds were uninjured by frost. A few extracts from some of the letters are given herewith.

FROM E. F. GUILD, EAST SAGINAW.

It is hard to tell what the prospects will be for fruit upon the opening of spring, as many things may happen before the fruit is out of danger, but at the present time the prospects for a good crop are flattering. The ground was full of water when cold weather set in, and snow fell before the frost had penetrated very deeply, and it kept coming until nearly or quite twenty inches had fallen, which, of course, drew all the frost out of the ground in a short time. It was light and lay up loose, and we had snug freezing weather all the time, but not so cold as to injure the buds or trees (the thermometer ranging from 2° to 10° degrees during the cold snap). The snow acted as a mulch and protected the trees. Now the snow is nearly all gone (entirely so in exposed places), and we have had some very snug winter weather, and unless we get some snow to cover up the ground I fear the orchards may suffer, as well as wheat and grass. But there is every sign of a storm, and I hope it may be snow. You can report everything, so far as I know, in the counties of Saginaw, Bay, Iosco, Alcona, Alpena, Huron, Tuscola, Gratiot, Isabella, and Midland favorable so far for an abundant crop of fruit.

FROM C. P. LAWTON, OF THE LAWTON POMOLOGICAL SOCIETY.

We have chosen Mr. N. H. Bitely to represent us at the meeting of the Pomological Society at Lansing and hope he will be able to go. Our fruit is in excellent condition. it has gone through the winter, thus far, without harm, not a peach bud is injured, and the promise was never better.—this is true of the whole country, all varieties of whatever kind are in perfect condition. The thermometer indicated a pretty low temperature, but the wood was so well ripened that it was able to resist a greater degree of cold than would otherwise have occurred were the trees in less favorable condition: besides, the heavy body of snow which covered the ground, and the fact that the ground was not frozen, doubtless have materially aided in producing the favorable result which we find to exist. We confidently look for a bountiful harvest of fruit the coming season.

I hope the society will continue at each of its meetings to agitate the subject of varieties—that matter is not settled for this state yet—people are all the while putting out kinds that do not pay. N. H. Bitely of this place, has an apple orchard of 1,000 or 1,500 trees, two-thirds of which are valueless, so far as profitable production is concerned; and the same is true of my own. I set out 1,000 trees 12 years ago and thought I selected just the right sorts—but, I didn't. Soil has much to do with it. I am grafting over some of them, but I am fearful of making a mistake again. In discussing varieties the character of the soil should be considered—to some extent the exposure also. I do not think the Greening, Esopus Spitzenburg and Swaar are admissible on any but strong, heavy soils, and I am inclined to doubt if on lightish soils the Golden russet is desirable. I have found the Red Canada doing well on heavy soil, but how will it do on soils that are lighter? As to the Baldwin, Wagener and Jonathan they do finely on poorer ground, so does the Northern Spy,—but the Snow does not:—they bear, but the fruit is worthless.

Our experience here with grapes is very different from that of fruit-growers in western New York, as indicated from the discussion given in your report of 1876. Some of the Hammondsport growers find the Hartford most profitable, etc.—here it is nearly worthless. They don't like the Concord,—we find it here of excellent quality with few faults and has a ready market. I hope there will be a large gathering at the Lansing meeting and that they will make our legislature understand the necessity of action regarding the Peach Tree Yellows. We cannot afford to have the promising and valuable peach interest of Michigan destroyed without making all suitable efforts to save it.

FROM F. J. DOWLAND, LUDINGTON.

I heartily wish we could send you some samples of fruit from this section, but you know "the man must first be a child." Our county in the matter of fruit culture is comparatively new. It has only been three or four years since our people awoke to the idea that we could grow fruit of all kinds as well as our southern neighbors on the lake shore. A large number of young orchards are being planted out each year, and I am looking forward to a time not far distant when we shall not have to import apples to supply our needs. So far as I can learn the fruit prospect for '79 in this region is flattering, but we are now passing through a few days of "break-up" or spring weather, and what the result will be remains to be seen. If we had more horticulturists in this section we would be better able to give more satisfactory reports and results of labors, but we have really none that make a specialty of it, notwithstanding

the opening is a good one,—and where fruit culture is confined to the farming districts, or rather left in the hands of farmers, we cannot get satisfactory results; but one thing has been demonstrated, we have the region for the production of especially fine small fruits, and not very small at that.

FROM S. W. FOWLER, MANISTEE.

In reply to yours of the 25th, I would say that the prospect for a good fruit season was never better in the Manistee region. The coldest weather registered thus far was six degrees above zero, and there has been neither frost nor cold to injure the tenderest fruit bud.

The hard winter of several years since which caused such havoc among fruit trees generally in the west, seriously injured peaches here, and though it did not destroy them, confidence was shaken, and for a season there was hesitation in regard to investing in the business. For the past two years, however, the mercury has not touched zero, and once only in twelve years has the cold injured even peaches. Under these circumstances the conclusion is irresistible that this is one of the best fruit-growing regions in the world, and people are now generally turning their attention more or less to fruit culture, and we can but think that in a few years at farthest, Manistee will take her place in the front rank of fruit-growing counties.

There can be but one explanation of the mildness of the winters here; it is found in the great depth of Lake Michigan and in the fact that the prevailing winds are from the west and southwest. When the mercury was 6° above zero this winter in Manistee, it was 16° below in Chicago and Milwaukee, and 20° below in southern and central Michigan. Here fruit is comparatively free from worms, and curculio is unknown. Manistee plums are not excelled by any we have ever seen, and thus far have taken the first premium wherever exhibited, and at the State Fair twice, indicating that this is a peculiarly inviting field for the culture of this delicious fruit.

With farms and fruit lands cheap, and a climate and soil not excelled for orchard purposes, Manistee will undoubtedly make an excellent fruit record in the future.

FROM J. N. STEARNS, KALAMAZOO.

As far as I have been able to learn, there are no kinds of fruit injured in the least by frost as yet, in this county. But it is the general opinion that apples and peaches show rather a thin setting of fruit buds, and this is my own observation on trees that were allowed to overbear last year, while those that bore a light crop, have a full amount of fruit buds this year. Another proof of the benefit of properly thinning advocated by our society.

FROM A. O. WINCHESTER, ST. JOSEPH.

Below I send a statement of shipments of fruit from the western townships of Berrien Co. for 1878, condensed from a report furnished by Mr. A. M. Nichols, General Freight Agent of the Chicago and West Michigan R. R., and by Hiram Brown, Esq., Custom House officer at St. Joseph. Also from a report published by the Benton Harbor Palladium made up at the Custom House at Benton Harbor.

I regret that I cannot give each kind of fruit, but am unable to do so as the only report that specifies each kind is the one from Benton Harbor:

Bbls apples.....	97,183
“ cider.....	3,558
Half bushel crates of berries.....	181,739
Baskets of peaches, grapes, &c.....	92,108
Cases of canned goods from Benton Harbor.....	25,730

FROM W. O. FRITZ, POMPEII, GRATIOT COUNTY.

The prospects for a large crop of fruit, especially apples, in this section are quite flattering, at this time, this statement being modified, by the neglect which peach trees receive. A great many trees have been killed, others ruined by the borer. Since that cold weather four or five years ago, very few peach trees have been planted. Cherry and plum trees are not so plentiful as in other sections. Our county is comparatively new, and the fruit interest has been sadly neglected (I might possibly except apples). But as regards apples we will not take a back seat until we have a fair trial at least. One of our citizens has, on one occasion at least, sold Northern Spy apples in Ithaca the Fourth of July.

Some of the grape vines seem to be diseased. I think, from a passing observation, that the Phylloxera, is in our midst. Will examine more closely. Our winter has been steady, the coldest 8° to 10° below zero.

FROM J. AUSTIN SCOTT, ANN ARBOR.

I consider it an honor to be elected a vice-president of our Society and I accept, hoping that I may be able to lend a helping hand in promoting the noble work in which you are engaged. I have had my day and I have thought I ought to be placed on the retired list. Still if I can in my humble way, promote the good cause of Pomology I am willing to hold on a little longer.

I would very respectfully suggest the propriety of having a committee selected from the best fruit-growers of the state to take into consideration the propriety of cutting off from the list of apples, such varieties as are inferior in quality, notwithstanding nursery men propagate them (they say), because they are called for. Now the time has come when every kind of apple, that is not No. 1 in quality, should be discarded. There are too many kinds recommended. The people need to be educated and the evil done away with. I find there is an awakening to this subject in this county; and perhaps there is no better way to promote this good cause than meeting together, say monthly, and comparing notes and discussing the matter.

FROM JOHN J. HUBBELL, BENZONIA.

My first report from this county must be principally concerning my own work. I am not engaged exclusively in fruit raising, but am attempting as a branch business, to establish a first-class orchard, expecting to produce an abundance for home use and some surplus for market. I only commenced setting trees here in the spring of 1875, but had had some experience before in the State of Missouri; have set about 200 apple trees, the first 100 consisting of about 50 varieties on trial, the other 100 only 4 kinds, Golden Russet, Grimes Golden Pippin, Wagener and Ben Davis, all of which I shall top graft with Red Canada. I have set 100 pear trees of about a dozen varieties, also 75 plum trees, the last I have enclosed with a high picket fence and shall make a hen park of it for the benefit of the cureulio. I give good cultivation to all

young trees, careful pruning and a close look-out for insects, with a good washing of soft soap once or twice a year, and so far everything is lovely.

Our winter is good so far no colder than 4° above, and it has not been over 30° above since about the first of December. Our apples matured much earlier this year than usual, and we are now eating a No. 1 Golden Russet and Northern Spy.

January 23, 1879.

FROM A. C. TOWN, MILO, BARRY COUNTY.

As regards our fruit prospects I would say the indications now are there will be a good crop of apples, peaches, pears, and the smaller varieties of fruit in this county. As the most of this county is high table land, lying between the rivers of Kalamazoo and Thornapple, and interspersed with numerous inland lakes fed from springs, the thermometer does not appear to as yet get below zero, as in the valleys on either side of us. In that respect we are highly favored, and seldom have a failure in fruit.

FROM J. B. BARNES, OWOSSO.

In reply to your inquiry touching fruit prospects, I am happy to say that the information obtained from reliable sources in different sections of the county is very gratifying. I cannot learn that the intense cold that we had in January has done any harm. The heavy sheet of snow which has covered the ground for the last six weeks will prove highly advantageous to the coming strawberry crop. Grapes and peaches are unharmed, and from all that I can learn, I think the chances for an abundant crop of fruit of all kinds are good.

FROM B. GOTT, ARKONA, CANADA.

I may premise by saying that at present a great deal of uncertainty envelops our coming season's fruit crop; nor can we just here state with any degree of positiveness exactly what we are certain to realize. But as in many other cases of this nature, we may be allowed to premise and attempt to arrive at conclusions from circumstantial testimony, or the general drift of outside evidence. Knowing as we do the character of this country for good fruit, as at present developing itself; of her large and encouragingly productive orchards, both of apple, pear, plum, and peach; of her extensive and fruitful plantations of grapes and small fruits, we may perhaps be allowed to assert that our prospects are essentially good and deeply interesting. The cold of the past month in the present winter has been somewhat unusually severe; not here alone, however, but very generally and in various parts of the great republic, and the snow-fall has been heavy and long continued, but still we are not of the opinion that either of these conditions are anything injurious to our prospects for good and liberal gathering. The temperature of last January at its lowest indications here reached in the early part of the month 5° below zero, accompanied by a fearfully distressing and penetrating southwest wind, which we feared would most completely nullify our whole crop of peach fruit-buds, and raspberries, etc. But on examination at these points we can find but few buds, say not more than ten per cent of them so injured to the best of our present detection. These are the buds and these are the crops we are mostly concerned about in a cold time, as our apples and pears are not so easily affected by a low degree of temperature, and our other small fruits are mostly quite hardy. Grapes have advantages in their culture not so readily applicable

to peaches, viz.: the possibility of prostration and successful protection, and many of our most reliable grape growers are now adopting this method for encouraging certainty of returns. As soon as our cold is over the powerful influences of our clear sunshine in its reviving effects is most rapid and most astonishing. If there is only the faintest life to begin with it is soon increased to a gorgeous vitality and a grand floral display. Our winters are tedious and sometimes severe, but our springs and summers are the consummation of energy and attractiveness, developing the most wonderful results in field, orchard, and garden. We, therefore, feel confident that if nothing unusual occurs from this onward, our prospects are bright and very gratifying for an abundant crop of choice pomonal mercies. This, as you may well surmise, is what we most anxiously desire,—the climax of our cares, our labors, and our plans. We want plenty of fruit. We must have plenty of fruit, and there is but little danger of too much. Our people are great lovers of good fruit, and health and happiness are the immediate results of its free use.

FROM A. C. GLIDDEN, PAW PAW.

It will be impossible for me to attend your meeting at Lansing, and I fear that the representation of fruit from our section will be among the things hoped for but not seen. It is the more unfortunate, as our show of fruit at the last December meeting at Paw Paw was very meagre as compared with our ability to furnish a fine display. The very profuseness of the supply caused our usual exhibitors to say "every body will take fruit and I will not compete this time," and you are aware of the result.

Our prospects for fruit this coming season are good, in my opinion. I base it not only upon the perfection of the buds up to this time—which in the peach are perfect—but upon a law of compensation which has a tendency to even up things. An avalanche of fruit is as much a disaster as a dearth of the product. It demoralizes everything. People get to thinking that it don't pay to care for the orchards. They will get all they can to handle in any event, and more is burdensome. We don't get two immensely fruitful seasons consecutively. Those who have cared for their orchards by keeping up the fertility, so that the tree is able to both bear fruit and mature fruit blossoms, will this coming season be rewarded by a fair crop and good prices. But those who by a miracle of nature last year gathered an abundance, will look in vain for the miracle to repeat itself this season. Miracles don't come that way any more. They come, especially in fruit growing, only to those who work for them. And thus my prediction based upon the above conclusions is that apples will not be over plentiful, but the crop remunerative. Peach trees that have so far escaped the yellows will bear abundantly and the fruit will bring good prices. Fence-corner peach growing has received a sad set-back from the disease. It seems to have set its seal of disapprobation upon such spontaneous abundance. "By the sweat of thy brow" is the command, and fruit growers must heed it, in common with laborers everywhere. Small fruits are a sure thing in proportion to the intelligence exhibited in their culture. Up to the present writing, canes, vines, and plants are in admirable condition. Strawberry plants must yet pass the exigence of exposure from sun and frost, but the careful grower will cover with straw in the event of danger. The outlook I consider more than hopeful, and I trust that your deliberations and discussions will result in sending forth that knowledge which will compel success from a seeming reluctant nature.

HARDY PEACHES.

A communication was read from W. Asa Rowe, of Mason, Ingham county, saying that the county was not especially adapted to the growth of the peach, but in certain locations this fruit might be grown with some promise. He inquired if there was any difference in the hardness of varieties.

Several gentlemen replied. N. H. Bitely said the Barnard and Hill's Chili he considered a good deal more hardy than the Crawfords; Hale's Early he thought less tender than the peaches of the Crawford type. President Lyon acquiesced in this statement. Prof. Beal said for Mr. Rowe's location he would recommend the growing of seedlings from pits of Hill's Chili or Barnard, as these so often reproduced themselves; he believed this to be the true method of securing hardy trees, and in this idea he thought he saw a promising plan for circumventing the yellows. A package of peach buds from Nathan Shotwell, of Concord, Jackson county, and another from I. M. Selover, of Coldwater, were referred to a committee consisting of Messrs. Lawton, Sherwood and Mann, who reported enough buds alive to produce a crop in each set of twigs.

After the appointment of the following committees, the meeting adjourned until seven o'clock:

Committee on Fruits—N. Chilson, Battle Creek; C. N. Merriman, Pentwater; H. C. Sherwood, Watervleit; S. B. Mann, Adrian; J. P. Thompson, Detroit.

Committee on Resolutions—C. L. Whitney, Muskegon; W. J. Beal, Lansing; I. M. Selover, Coldwater.

Tuesday Evening Session.

The evening meeting was called to order about seven o'clock, and there was a very fair attendance. The following list comprises the more prominent fruit growers present:

Allegan—M. B. Williams.
Barry—A. C. Town, Eugene Davenport.
Bay—B. F. Partridge.
Berrien—H. C. Sherwood.
Branch—I. M. Selover, E. Bidelman.
Calhoun—N. Chilson.
Eaton—Wm. Fowler.
Grand Traverse—W. W. Tracy, C. P. Avery, W. D. Bagley.
Hillsdale—Brown Bros., A. Hewett.
Ingham—W. C. Latta, L. H. Ives, O. Miller, L. B. Potter, G. W. Brown, W. Asa Rowe, A. J. Cook, W. J. Beal, A. A. Sturgis.
Ionia—W. D. Arnold, P. D. Sneathen, E. LeValley, G. Hosford, N. E. Smith.
Jackson—H. W. Doney, H. F. Thomas.
Kalamazoo—George Taylor, W. H. Harrison, H. Dale Adams.
Kent—S. M. Pearsall, C. W. Garfield, A. B. Cheeney, M. B. Hine.
Lenawee—S. B. Mann.
Muskegon—John Ruddiman, C. L. Whitney.
Oceana—C. N. Merriman.
Saginaw—E. F. Guild, J. S. Estabrook, W. L. Webber.
Shiawassee—D. T. Dewey.
Tuscola—William Johnson.
Van Buren—T. T. Lyon, A. Chapman, N. H. Bitely, G. W. Lawton, Jas. E. Ferguson.
Washtenaw—J. Webster Childs.
Wayne—J. P. Thompson, R. F. Johnstone, E. W. Cottrell.

The first topic of the evening was best form and arrangements for

A HORTICULTURAL EXHIBITION HALL.

President Lyon introduced the subject and the speaker, Mr. N. Chilson of Battle Creek, by remarking that the question had for more than a year been in the hands of the executive committee, and several plans had at different times been suggested and none adopted because until now there had been no promise of the employment of a plan we might adopt, but now in case any new hall is to be erected by the State Agricultural Society, it will probably be for us, and it is necessary that we adopt some definite plan for use.

Mr. N. Chilson.—I am without a paper, an essay, or address, but I have a plan to submit to you. This subject has been on my mind more or less for years, and I have concocted a good many plans, each one to be superseded by another the result of more experience. For a number of years I have had to do with the arranging of fruit in Pomological Hall at the State Fair, as well as at county fairs, and as the result of this experience I give you the ground plan which you see upon the wall. It is intended to represent a rectangular building 140 feet in length and forty feet in breadth. I believe that a plain straight building is not only more economical but more convenient and satisfactory. I would place the fruit on flat tables through the middle of the hall, giving nine feet for the people to pass on either side of the tables. I would have two rows of these tables with two and one-half feet of space between for committees to work without disturbance from the visitors. These tables should be four feet broad. Next to the sides of the hall I have placed a line of tables and a line of shelving, the whole to be used for plants and flowers, canned fruit, dried fruit, etc., if desired, or in case of necessity the tables can be employed for fresh fruits the same as the middle tables. In all this arrangement I have discarded any bars which are usually employed ostensibly for the protection of the fruit, but which it seems to me are entirely unnecessary and an extravagance as far as space is concerned.

Secretary Garfield.—How many plates will the center tables carry, basing calculations upon the size of the plates that we now have on hand?

Mr. Chilson.—Fully 5,000.

Prof. Beal.—How many plates have been upon exhibition at former fairs?

Mr. Chilson.—At Detroit last year we put up about 3,000, and a large number were not placed upon the shelves; at Jackson there were above 4,000 plates at each exhibition, and at East Saginaw one year we had fully 5,000 plates shown.

Prof. Beal.—Would it not be wise to have places of entry to the space between the middle tables at intervals, for the convenience of committeemen and exhibitors?

Mr. Chilson.—Yes. I should have indicated that upon the chart.

E. F. Guild, East Saginaw.—I can see a decided objection to the plan of doing away with all bars of protection. The fruit will be handled and misplaced, and stolen in the midst of the great crowd that gathers on the main days of the fair.

Mr. Chilson.—Theoretically this may seem an objection, but practically wherever the plan has been tried with proper restrictions it has been found to be a success.

President Lyon.—Our best example of this was at the Centennial, where the fruit was shown upon flat tables with no bars, and I was assured that no difficulty arose from disturbance of the fruit.

Mr. Avery.—But was there ever a crowd with the jam that we have at times at our State Fair?

Mr. Lyon.—Most certainly. During the month I was there, upon many occasions I found as great a throng of people crowding along the passages next the fruit as I ever saw at a State Fair, notwithstanding the statements that with all the people at the Centennial there was no crowding. I wish it distinctly understood also that all fruit shows to the east of us have discarded the employment of the bars. I would like to enquire of Mr. Chilson how he has planned for lighting this hall?

Mr. Chilson.—Entirely by skylights in the roof and the doorways, which are large.

Prof. Beal.—This will be a great improvement upon any previous plan, and my opinion, based upon experience in doing committee work for many years, is that there should be no light admitted through the sides of the structure to blind the eyes. I commend this arrangement.

Mr. Guild.—I am interested in the flower department and must confess that I have some criticisms to offer upon the plan looking from my standpoint. In the first place it seems to me best to have the plants and flowers occupy a section of the hall taking middle and outside so as to have the department more compact. The plan of placing plants upon a shelf above fruit is a very unsatisfactory one, because in watering and caring for the plants the fruit will be injured.

Mr. Chilson.—I water plants in similar positions every day at home with things beneath that must not be wet and without difficulty. You must remember that the lower shelf or table is only thirty inches high and the one for plants not more than forty-five inches high, so there will be no difficult reaching with the watering can.

Prof. Beal.—I have always advocated the placing of classes together in fruit, and I see no reason why it is not just as necessary with flowers and plants, and for this reason I would advise giving one end of the hall up to plants entirely, and not mixing along with the fruit.

Secretary Garfield.—It seems to me while we are arranging the hall we should have a good deal of regard for appearances as well as convenience of committee work. Very many people just glance into the hall and get a general view of its interior and pass on. We want to make the first impression as effective as possible. I know of no more effective way than to give the decoration of the sides of the hall into the hands of the florists. I can conceive that this arrangement would result in a charming effect and not in the least clash with effective committee work. With the plants all at one end we do not get at one sweeping glance a full conception of the horticultural exhibit.

Prof. Beal.—I fully appreciate the force of this statement of the secretary, and still think by some arrangement the plants could occupy a section through the middle of the hall—decorating the walls with evergreen—and yet have the plants so placed as to be convenient for committees.

Mr. Chilson.—My thought was that by giving the walls to the florists we should get them better decorated than by any other method.

S. M. Pearsall, Grand Rapids.—Have you had experience in making an exhibit without the bar to keep people from the fruit.

Mr. Chilson.—Yes, at the centennial; and I am satisfied that if we once try it we shall always do without it thereafter. In explaining the chart I should have said that at one end of the hall I have planned to have two offices—one

for the secretary and his assistants, the other for the treasurer and executive committee meetings.

Mr. Guild.—My experience has been that fruit men are the worst to manage in this matter of touching and moving specimens of fruit, and I see no way only to keep men from handling even their own fruit after it is once in place.

Mr. Lyon—I would have a rule rigidly enforced forbidding any person handling fruit except by authority or permission and have notice of the rule posted where all could not help but see it; one or two examples made of transgressors would soon settle the whole matter.

Prof. Beal.—I must recur once more to the matter of plants and flowers. They show better by massing, and florists will be better satisfied if given an opportunity to exercise their skill in arranging plants so they will mutually benefit each other. It seems to me in any plan this fact should not be overlooked.

Mr. Guild.—My suggestion concerning Mr. Chilson's plan, is that the arrangement of shelving remain the same, but that the plants and flowers occupy a section across the middle of the hall, having special addition of shelves to accommodate the massing of specimens, and then the exhibit, as viewed from either end of the hall, will have a background of plant and floral decoration. I think this modification would please our plant growers.

Various motions were made concerning Mr. Chilson's plan, and finally the following substitute by Judge Lawton, was adopted:

Resolved, That the plan presented by Mr. Chilson commends itself to the Society, and that in general terms we accept and adopt the draft and refer it to the executive committee for such amendments in the details as they shall see fit to make.

The next subject—"What steps can be taken toward the

ORNAMENTATION OF COUNTRY SCHOOL GROUNDS."

was opened with an essay by W. C. Latta, of Mason, which we give in full:

Though the ornamentation of school yards is outside this society's regular line of work; though it is unpopular—something new, almost unheard of and unthought of; though it smacks of extravagance, and will cost both time and money with no return in kind; yet, associated as it is with any true education. I offer no apology for coming before this body to urge the improvement and embellishment of the school grounds of our rural districts.

In behalf of the alternately bleak and parched yards turned into commons for the pasturage of vagrant cattle and swine; in behalf of the heavy-footed boys, and hoidenish girls only less noisy than the boys; in behalf of the poor benighted parents who can't see why in the world their children are so rough; and last, not least, in behalf of the careworn, disheartened teacher who daily sweeps out shovelfuls of real estate, I desire to suggest some means of improving the appearance of the grounds of our country schools.

To men I am called on to speak to—a far too numerous class of individuals; I can hardly call them men—whose highest type of beauty is utility, and whose ideas of economy are met in using the fire-shovel for poker and dustpan, I should hold my peace. But there are others who are not continually harping on how it was when they went to school; men who see some utility in beauty, and who desire to throw around their children any influence and association

that will help to build them up into the full stature of men and women. To such—and there are such here—I gladly contribute my mite.

A WORD OF CAUTION.

Much as the average school yard needs immediate improvement, we must remember that the farmer is a conservative, and looks askance at any innovation; and what greater innovation than ornamental country school grounds. We must feel our way cautiously, for any active measures would probably result in a dead-lock, as three out of every five of the “deestrick fathers” would get “riled,” and, in all the dignity of their local prestige, declare that “we won’t have any more traps for the big boys to smash up.” Before much can be done in this direction, the ideas of the people on this question must undergo a radical change.

There must be a veritable growth of wholesome public sentiment in this regard. To secure this we must agitate the question, pleasantly, persuasively, but persistently. Hence, I am glad to see this society making a move in this direction. It is a credit to any society, whatever its aim, to work in so good a cause.

But mere talk will avail but little, unless it crystallizes into definite plan and action.

AWARDS OF MERIT.

May not this society again take the lead by offering at each quarterly meeting a prize for the best plan of school grounds, drawn by a country teacher, and which had been previously approved by the school patrons? Such an example would probably be followed by the county agricultural societies, whose potent influence would soon arouse an interest in school ornamentation throughout the state. Again similar prizes might be offered at the annual exhibits of the State Pomological or State Agricultural Society. It should be understood, however, that all such plans must first be approved by the school districts in which they originate. This precaution, by making them judges of, and interested parties in the plans presented, would bring the question of school ornamentation right home to those whom we most need to please, the school patrons themselves. Following this, prizes might be offered for the best plans which are to be put into execution. And then it might be advisable to award medals to the schools having the best grounds actually laid out.

The work which I have briefly outlined will require time—years—and yet it is only initiatory. But this should not discourage us, for in every enterprise how much preparatory work must we do before we can pluck the ripened fruit of our efforts. The first step, however, must be taken; the people must be educated to see the present condition of things and appreciate something better. We must labor to secure such a reform of public sentiment on this question as will make the ornamentation of school grounds not only possible but general.

And this society, with all its prestige, its command of the press and its premiums, added to the enterprise of its members, has the power to inaugurate, and, with the aid of similar societies, effect such a reform. In fact, I can think of no other efficient means to this desirable end; and I hope the society will not shirk the responsibility by laying it on the shoulders of our educators. This society is an educator, great and authoritative, and can appeal to the people as the teacher can not.

THE TEACHERS' WORK.

But the teacher has a work with the children. Too often, and yet with some truth, is it asserted that the children will not sufficiently appreciate ornamental features to preserve them from mutilation.

Somebody is to blame for this; and I believe that many teachers are gravely responsible for neglecting to cultivate the æsthetic qualities of those intrusted to their care. The children should be encouraged to bring into the school-room and care for their plants and pictures. Many a dull noon might be made pleasant and profitable by caring for a bed of flowers.

The boys will enthusiastically assist their teacher in clearing the ground of rubbish and in sodding the bare places. Half a dozen of the boys could easily be induced to plant, care for and protect as their own, as many trees from the neighboring forest. Some one in the district could be found willing to donate an evergreen or two, which would not only be ornamental, but also screen some unpleasant feature of the school-yard.

Then the schools in each township might unite in the purchase of a banner, for which each might compete every month. In this monthly competition for the honor of being the banner school, the deportment, scholarship and neatness of the school, the general appearance of the yard and buildings, and the condition of the fence, walks, borders, school furniture, etc., might all be taken into account. This would make more extra work for the town superintendent of schools; but I verily believe the saving in wear and breakage of school property would amply repay the expense of making a close monthly inspection, and reporting the results of the same in the local paper.

But I am going into details too ample. To the ingenious, willing teacher, ways innumerable will suggest themselves for bettering the condition of both grounds and buildings. And how shall we estimate the good that would result therefrom? Instead of a rough looking set of fellows, who run pell-mell, with whoop and yell, to stone off a fugitive squirrel, we would see quiet, genteel boys, with hands ready to defend the weak, with kindly words for squirrel and bird, and that kindling expression of countenance which betokens thought. With such a spirit pervading a school what might we not do in the way of ornamenting the school ground? Other plans might be suggested, but a hint to the wise is sufficient.

A British general once very truly said the American boys breathe in the spirit of liberty. It is equally true that the children of our schools breathe in, drink in, the very spirit and life of their surroundings; and that the influence brought to bear upon them during this susceptible period affects the life and character for all time. Why, it is a fact that the most difficult and least appreciated work of our colleges is in combating and correcting evils which had their source away down at the very foundation of our public school system.

Thus everything connected with the early education of the child becomes a matter of exceeding importance, and hence the tasteful embellishment of the school grounds, calling into active exercise as it does, the finer qualities of the child nature should receive our thoughtful consideration and earnest support.

Prof. Beal.—This is a capital topic for discussion, and after making a single remark I wish for a moment to put a question to the essayist. This subject is one peculiarly appropriate in connection with the work of this society, and I trust now that it has been brought out it will be kept before our people until something of practical value shall result. Our school houses throughout the country are a shame to our civilization. One gets a whole history of school management by making an observation upon school premises when passing,

and too often the story told is a very unpleasant one to think about. School houses commonly have unsightly outbuildings, broken windows, clapboards off, and the ground littered with wood, brush, clubs, etc., with mudholes in front of the steps, and if there is not a rare chance for improvement here I am no judge of such matters. Mr. Latta did not give in detail any plan for ornamenting school grounds. I would like to ask him to give us a little light here.

Mr. Latta.—It is difficult to give advice except one knows the situation of the grounds and something of the district as well. In general terms I should say, have larger grounds than are usually given to this purpose and plant groups of shade trees, giving as much variety as consistent. The outbuildings I would have screened with evergreens, and upon the whole ground I would get a moderately smooth turf as soon as possible.

Prof. Beal.—The great difficulty lies in getting the town superintendents and district boards interested in any such project. I should name three important points to strive after in pushing this matter to a practical undertaking:

1st. Secure commodious grounds and see that the house is kept in perfect repair.

2d. Grade the surface smoothly and seed down.

3d. Put in here and there collections of trees and shrubs and care for them. I would attempt very little in the way of flowers at first, some teachers might succeed in doing something of this kind, but the majority will fail.

Secretary Garfield.—What does Prof. Beal think of introducing plants for purposes of instruction in botany, as well as for ornamental effect?

Prof. Beal.—Inasmuch as generally we have throughout the county no spring schools I imagine very little can be done with flowers for this purpose, and as for shrubs and trees occasionally a teacher might do something toward employing them as a means of instruction but it would be the exception rather than the rule. To be frank I have very little hope in this direction with the present aspect of affairs as regards our schools.

Judge Lawton.—I am in favor of ornamenting school grounds and road sides, but there is little to encourage with the cattle of the country having the freedom of the highways. If school grounds are ornamented they must be cared for by somebody,—that person should be the director of the district, but as he gets no pay for it how can you expect him to preserve the property as he would his own. As matters stand I think the simplest thing that can be done is the best. In Lawton we chose an oak grove and erected our school house in the midst of it. I am opposed to the children's remaining at school many hours a day any way, but while there would like to make it as pleasant as possible for them.

Mr. Latta.—My conviction is that we must begin this matter with the children. They must be interested, and when once you have their hearts in the work the main difficulty is overcome.

President Lyon.—Gentlemen, I do not know as you are thoroughly aware of it, but I assure you in awakening the people to a proper consideration of this question you have undertaken a big job. You must go back of the school-house, the school-grounds, and the children, to the homes, and there work a while first before you can expect to accomplish much directly. When men begrudge a few feet of ground for an evergreen tree because the same space might be profitably occupied by a potato hill; when men narrow down their front yards to enlarge their grain fields and pasture lots, you need not expect very much enterprise in the direction of ornamenting school premises. And after

you have by great effort secured the attention of a few families in the district, and they are willing to take hold and add a little to the beauty of the school-house surroundings, how long will this spirit last with the present grade of teachers, who in large majority care nothing for this sort of thing, and will not turn their fingers over to maintain anything that is already begun. So you see there is another serious job in the education of the teachers. I have known teachers in rare cases to make flower-beds at the school-house and preserve them in attractive condition, all to the great benefit of their schools, but unfortunately this state of things can be found only at great intervals. I apprehend our work is with the parents and patrons of the schools. If we can by any means awaken an interest in securing larger, more attractive and well kept school-grounds, we are doing a great work for our State.

Mr. Guild.—I arise rather to a suggestion of a point of order than to continue this discussion. It seems to me that notwithstanding this is a very interesting and profitable discussion, we are getting away from the scope of our legitimate work as decided by a vote of this association some meetings ago. The fact is this is a State Pomological society, and although a strong effort has been made to make it "horticultural," so as to cover such discussion as this, it has been a failure. I make this suggestion, not to choke off discussion, but to call your attention to the fact that our name is not in keeping with our work.

Prof. C. L. Whitney, Muskegon.—I think the gentleman is all wrong. We are right in discussing this question here. It is a profitable one, and comes within the scope of our society work. Our name does not necessarily describe our work, but designates the society from all others, and indicates a piece of work that we may do. It was the name under which we were organized. Let us keep it, but let us not make some definition of it circumscribe our work. To me this question of ornamenting school-grounds is one of the most interesting because it has been so much in my mind. Since I helped plant out a few evergreens at the Normal school very early in its history, and while I have been watching their rapid development and effect upon the beauty of those grounds I have still been thinking, and talking, and working toward increasing this kind of work about our country school-houses. It is a great wonder to me that more is not done in this direction, because a little counts so much, and so large an interest is received upon the investment, because trees grow while we sleep, and do not stop in vacation. I, too, am in favor of flowers and bedding plants. Prof. Beal was misinformed concerning our schools in western Michigan, for we do have spring terms,—just the time to accomplish this kind of work, and I give my opinion as the result of experience, that work of this kind properly superintended is of more practical value to the children than any single study they pursue. This is a good way to gradually work out of the idea that all which is to be learned must be dug out of books. Many homes would be completely changed as a result of a little work in this direction, and whole neighborhoods influenced for the better.

Prof. Beal.—My objection to bedding plants and flowers is simply on the ground of expediency. It seems to me they will be neglected in the summer vacation and the effect lost.

Mr. Whitney.—I have yet to find a neighborhood which lacks a family that would not care for a flower bed in the school yard during vacation.

Prof. Beal.—I move that the suggestions contained in Mr. Latta's essay concerning methods of interesting the people in the ornamentation of school grounds, be referred to a committee consisting of Prof. Whitney, for the pur-

pose of securing a resolution upon which we may act before this meeting finally adjourns.

Sec'y Garfield.—I support the motion, and heartily endorse the general sentiment expressed here that looks toward some practical methods of beautifying our school grounds and employing the same elements of beauty as a means of practical education in the schools.

The motion was carried unanimously. Many of the society desiring to attend Mr. Chandler's reception at the Lansing House, and it being nearly 9 o'clock, on motion, the meeting adjourned until nine and one-half o'clock Wednesday morning.

Wednesday Morning Session.

At the hour of opening the meeting the room was well filled, and the discussion on the first topic of the morning,

"HOW GOOD A VEGETABLE GARDEN CAN THE FARMER AFFORD,"

was opened with the following essay by Mr. Eugene Davenport, of Woodland, Barry county:

How much has been said and written, but how little, really, done about the farmer's garden! When overworked men and women in the city begin to feel that life is becoming a burden, they resort to the country for health and quiet, and force an armistice with outraged nature. Here the air is pure, the food simple and healthful. The orchard is visited for its fruits, and the well-kept garden never fails to furnish the most tempting vegetables; life upon the farm is a pastime.

That's the way it is in the books. That's the way the poor garden is dragged into publicity in its Sunday clothes, to furnish spice for some lovesick novel. It is all plausible enough and reads beautifully, but, in the generality of cases, is all untrue, and the farmer's garden is far from the orderly little paradise it is represented as being. That some farmers do have good gardens cannot be denied; but the average are, to say the least, very poor, and in most cases they are nurseries for all sorts of troublesome weeds. The thrifty pigweed bends to say "How d'ye do" to the sweet corn, and the onions, and the cabbages, and the beets, and the lettuce, are struggling in unequal conflict with the purslane and the ragweed, which latter, however, unlike most conquerors, soon hide the shame of the former.

INVESTIGATION PROPOSED.

There is, seemingly, no possible reason why every farmer should not be the possessor of a well-tended, productive garden. But he is not; and a fact is a fact, no matter in what shape it presents itself, and that in spite of all speculation and theorizing. Believing that there are reasons for everything, we are tempted into an investigation, if possible, to discover and suggest remedies. Although I do not expect to say anything new, I hope to hear a full discussion of the topic by those who have had more experience. It were presumption in me to attempt to tell how to keep a garden, and I shall merely notice some of the reasons why farmers do not have better gardens, with a view to an answer to the question.

EXCUSE NOT ACCEPTED.

To this end, then, we look first to difficulties—both real and imaginary—that prevent the average farmer from having, throughout the whole season, a choice selection of vegetables, and, I may add, small fruits, for they suffer equally with the vegetables at the hands of the careless farmer. Want of land or room for a garden can be no excuse, for every farm, large or small, has its "garden spot," and it usually occupies enough territory for a really elaborate affair. Room, then, can be no excuse. The money required is of almost no account; but time, or rather the want of it, is his great cry. Regardless of the fact that it takes but little work to keep his garden clean—but a great deal to get it so—he allows the weeds to come up, flourish and ripen to haunt him another year. He may pull a few for the pigs, but that only gives the rest a better chance. I have no other argument upon the question of time, aside from that it requires but little time, if properly used, than this: farmers can never urge want of time as an excuse for the neglect of the garden and general tidiness of the place, as long as so much time is absolutely wasted by the farming class; wasted both by squandering time, and what is almost as bad, unnecessary labor, from the want of definite plans. Want of time, therefore, is not a real difficulty but an imaginary one; let us see if there is one that is real.

THE SUFFICIENT REASON.

Now, there are two things in this world that a man always dislikes to own that he is possessed of. These are ignorance and sin; and usually the more he has of either the less liable is he to acknowledge it. But if it comes to the scratch, as we say, he will link the two together and call it the sin of ignorance, and think it ought to be winked at. Who ever heard of a merchant, or a physician, or a lawyer, or any professional man beginning his business without preparation, and succeeding? Indeed, our professional men mostly believe that thorough fitting is a necessary antecedent to a successful business. Yet many a farmer begins his work on the farm without the least bit of preparation, nor has he even acquired a disposition to experiment and to learn. He is not able to keep a good garden, simply because he does not know how. Working without a system, it takes all his time to supply the bare demands of a hungry stomach, and the finer tastes are not gratified.

WORD OF CAUTION.

Like all education, his must be a growth, and he must not reform too suddenly or he will very likely fail in many particulars, and it not meeting his expectations, he will quit in disgust and conclude not to reform at all. Let him begin with a few vegetables, well cared for, and increase his stock as he increases his ability by careful attention, by experiment and by reading. Then, when he comes to appreciate the fact that a good garden is a luxury, and enjoyed by but few, he will take pride in devoting the little time needed, and derive much satisfaction from a small outlay.

SOME POPULAR DELUSIONS.

Many notions, it seems to me, stand in the way of a good start in this direction from the fact that they have been handed down from the remotest antiquity, and have become habits. One is, that a garden must be fenced hen-high and pig-tight. This leaves a strip around the edge of the garden that cannot be touched with the plow, and we have the pleasant alternative of spad-

ing it or leaving it as an eyesore all summer, where weeds will grow in spite of us. And what is all this for? Simply that a few troublesome old hens may enjoy a liberty that not another animal on the whole farm possesses. If we cannot afford to keep chickens and turkeys within proper limits, where they will not destroy more than they are worth, we cannot afford to keep them at all. Farmers are beginning to keep fine-blooded horses, and cattle, and sheep, and hogs, but the chickens must "rough it" and get their own living, which they continue to do remarkably well, owing to the hen's peculiar adaptability to general destructiveness. Let the poultry be kept properly confined, and the gardens, so far as unsightly, be hidden by appropriate screens.

Again the farmer has learned to make the horse cultivate his corn almost exclusively, to sow his grain, to reap it, and frequently to bind it,—to do almost everything,—but has not yet, in most cases, learned to make him work his garden. As has been repeatedly said in this society, the garden, if disposed in rows and not in beds can be almost entirely cultivated by a horse very cheaply and very easily. Market gardeners understand this, and why should not the farmer?

CONCLUSION.

The question is, however, "How good a vegetable garden can the farmer afford to have?" As I have eliminated want of time from among the difficulties, the question is practically answered viz.: that as soon as he knows how to keep it he can afford an indefinitely good one, and can keep such an one cheaper and easier than he could a poor one before. I believe that in this and everything else our difficulties are mostly reminders of our want of knowledge. He can afford to raise any and all vegetables that suit his taste. But the question of how extensive a garden he can afford to keep is still unanswered, and it is a point that I hope to hear discussed. It seems to me that its extent should be limited to the supply of his own table; that he can spend no great amount of his time in the garden; that he can in nowise afford to become the market gardener. Let him not make gardening his avocation, and not allow it to intrude upon his farm proper. He cannot afford to raise an abundance to sell, but he can well afford to raise an abundance to enjoy.

W. Asa Rowe.—I think one of the most important things to be done in connection with the bettering of farmers' gardens is to disseminate definite information concerning the growing of finer vegetables. I have in mind the example of celery,—one of the vegetables of the garden, and yet almost never found in the farmer's garden. Perhaps most families have not learned to recognize its value, but in case they come to this knowledge, none of them can raise it successfully because they do not know how. It took two years of blundering for me to get so I could raise it for the lack of a little information given by our Secretary just before my successful trial. The methods of successful culture of the best vegetables with a good deal of attention to the minute details should occupy more time in our agricultural and horticultural gatherings.

Prof. Beal.—Agriculture is a pretty broad field to work in, and if a man expects to carry on all branches of it in one establishment successfully, he will awaken sooner or later to a great disappointment. Some thing or things must be made specialties. Now it is a question in my mind just how good a vegetable garden a farmer can afford to have. If he aims to make one as good as

his neighbor's who is a market gardener, he will very probably fail in some of his main farm operations sufficiently to neutralize the success of the garden test. My impression is quite in accord with that of the essayist when he indicates that the farmer can afford to do pretty well in the garden what he can do by horse-power. The garden of the farm can be made to furnish the larger part of an excellent living for the family at a slight expense if deftly managed; but most farmers do not seem to know how. They seem to think the garden must be a piece of ground set off and dedicated to this purpose forever, to be shut in by a high fence, to be entered by a small gate, to be ornamented with beds of short rows lifted up higher than the general level. Perhaps this notion is an imported one from some country where land is high and horses are not, at any rate it does not apply to us, and I commend to the farmer a system of long rows which can be attended by a horse and cultivator like any other farm hoed crop. When once such a plan as this is adopted the garden will not be called an expensive luxury, and making garden will not be the dread of the year.

Judge Lawton.—I would like to ask the Professor a question of practice for information. How deep should beet, carrot and such seed be sown?

Prof. Beal.—It depends largely upon the kind of soil and its moisture. In ordinary seasons a seed as large as the beet I should sow from half an inch to an inch—smaller seed at a less depth—and very small seed like celery I should get as little soil as possible on and have it beneath the surface, I wish to add just a word about celery: it is a marsh plant naturally and we would do well to remember this in planning to raise it. It does best in low ground where the water is not far from the surface.

S. M. Pearsall.—Experience is a profitable teacher I think usually. I got to be a man of considerable age—nearly as old as I am now, before I learned how to successfully make an asparagus bed—I found to make a good one it needed a preparation of soil for 18 inches or two feet in depth and two years time before cutting; but the success is perfect with such care as this.

George Taylor, Kalamazoo.—I have profited by mistakes made on both sides of the ocean. I find that the right location has a great deal to do with some plants and right treatment for others. For instance I can not upon high, dry, land compete with any show at all in the growing of celery with my neighbor upon a low mucky soil where the plants can be soaking their feet at all times. In the making of an asparagus bed one needs to calculate for a life time—it will last that time if well done. It requires as has been said a deep soil and thereafter plenty of fertilizers. Salt is sovereign with asparagus. The plant naturally grows along the sea shore and will stand more salt than any valuable plant I know, one pound to the square yard will be a great benefit—but the same amount will kill ordinary garden plants dead.

Prof. Whitney.—In answer to the question which formed the title to the essay I wish to say, the farmer can afford to have so good a vegetable garden as will supply his table the year round with a generous supply of fresh vegetables in variety, and I do not wish to limit him to the more common ones either; I should certainly include celery which is one of the most health-giving in the entire catalogue, and if one does not like it he should learn to straightway, particularly if he is subject to nervousness in any form. It does not take a lifetime to make an asparagus bed; upon ground well fitted with a good dressing of manure each year, and two year plants to begin with, the family can have a supply one year from date of planting, provided discretion is used in the cutting. I should choose plants of Conover's colossal, and I can see no

reason why a farmer may not raise as good a vegetable as Mr. Conover himself on Long Island.

Pres. Lyon.—I would like to enquire, now that it occurs to me, of Prof. Beal if a variety like Conover's Colossal can be propagated and maintained by seed effectually?

Prof. Beal.—I doubt if it can be done. This mammoth variety is not a race by any means, and through the crossing of flowers I can not see how it can be maintained by the planting of seed without a great deal of care in the management of their fertilizing anyway, and perhaps not then for a time.

W. H. Harrison, Kalamazoo.—I am very skeptical in this matter of farmers' gardens. My belief is that a successful farmer carrying on a general business of mixed husbandry cannot afford to have much of a garden. He had better buy his vegetables at two prices than to meddle with growing them. I speak on the score of economy alone, without taking into consideration the pleasure of selecting from one's own garden.

L. B. Potter.—I can simply mention an instance that has come under my own observation of a man carrying on a general farm successfully who does afford to have an excellent garden.

E. F. Guild.—To be sure our best gardens are the work of our market gardeners, who make a specialty of the business. Still, I maintain by the employment of horse-power a farmer can afford to raise his vegetables as he would his corn in rows that require little or no hand labor save in gathering, and in this way he can raise them as cheap as a market gardener.

S. B. Mann, Adrian.—I can, from individual experience and observation, come somewhat to the support of Mr. Harrison's views. It seems to me there is a good deal of strength in his position. The farmer that works from daylight to dark in the management of his farm has little time to give to the garden, even although it be arranged never so conveniently, and the principal care of the garden comes when his farm work is pressing him hard. The large farmer who manages his farm with a good deal of help and only plans operations for others to carry out, can afford to sandwich in a little garden work for exercise; but I refer to the men who work their own farms with as little help as they can get along with. I will say this much for this class of farmer, that they can not afford to cultivate more than the more common vegetables in such quantities as will subserve their comfort.

Mr. Merriman.—I protest against the imputation that the farmers can not raise as good gardens as market gardeners. They may not raise vegetables out of which to make money; but in point of value to the family, I have in our state seen the very best gardens upon farms.

On motion, the whole subject of vegetables for farmers was referred to a committee, with a request that a list of varieties be made for the farmers' use.

The president selected Messrs. J. P. Thompson, W. J. Beal, E. F. Guild and S. B. Mann to act on such committee.

Mr. Guild again referred to the fact that this was not a horticultural society, and we should be careful not to get outside of our jurisdiction.

Prof. Beal.—I am tired of having this matter thrown in our faces, and it is high time we took measures to make our name accord with our work. I suppose this can not be done except by amendment to the constitution, but for the sake of testing the sense of this meeting I would ask, Mr. President, that we take a vote upon the question of how many are in favor of changing our name to Michigan State Horticultural Society.

The President stated if there were no objections the vote would be taken.

Mr. Whitney objected, saying this was outside of our programme, and would accomplish no good.

The objection was overruled and the vote taken amid a good deal of demonstrative amusement, and resulted in fifteen votes for change of name, and eight votes for retaining the present name.

The Secretary read an invitation signed by gentlemen of Muskegon, inviting the society to hold its June meeting in their city. Referred to the executive committee.

The Secretary said there were a number of gentlemen present who desired to discuss a subject that had already occupied the attention of the society to quite a large extent, namely,

THE PEACH TREE YELLOWS.

Judge Lawton, as chairman of a committee appointed at Paw Paw to draw up a bill for presentation to the Legislature, read the bill this committee had prepared, and said that the bill was now in the hands of the judiciary committee of the House of Representatives, and that this committee would like to meet a conference committee from our society to discuss the provisions of the bill. But before taking any action in this matter he hoped the various provisions of the bill would be carefully considered by the society.

A number of points were discussed by Messrs. Lyon, Sherwood, Bitely, Beal, and Thompson, without bringing out any new facts. All the gentlemen named, except Mr. Sherwood, favored the strict provisions of the bill, and considered the enactment of it as a law a most essential matter with Michigan peach-growers.

Mr. Sherwood argued that there would be great injustice in such a law, because under its provisions a man's orchard just loaded with ripening peaches might be condemned and destroyed when it was the only income he had, and his crop of fruit thus taken from him might, if sold, bring him in a handsome income.

Mr. J. P. Thompson by request, then read the following communication from C. D. Lawton, originally prepared in answer to some statements made by a correspondent of the Detroit Post and Tribune:

MR. LAWTON'S OPINION.

It must be conceded, as one of the facts regarding this destructive disease that has become settled beyond controversy, that it is eminently contagious: this fact was determined 50 years ago, and so recorded, and all subsequent observation and experience have uniformly and everywhere verified it. No one fully acquainted with the disease has ever disputed it, or in any degree called the matter in question; in truth, it is one of the first facts that becomes apparent whenever the disease appears—let it once obtain a foothold and the orchard is doomed; so is the neighborhood, so far as peaches are concerned.

That the yellows when left to itself spreads from tree to tree, from orchard to orchard, is as certain as anything which experience can determine; it has always done so in the past, and we may surely infer a similar result in the future, unless we relentlessly practice the as yet only known remedy, of speedily removing the diseased trees. Unfortunately there are many persons of the opinion expressed by your correspondent, better let the trees go and take their chances. They adopted this course in the vicinity of St. Joseph and Benton Harbor, and as a result what was but a few years ago one of the most

noted and prosperous fruit regions in America has had its most profitable interests entirely destroyed by an unfortunate adherence to this same short-sighted policy.

This correspondent deprecates legal sanction to entering a person's premises and destroying his private property, and intimates that it is only for the purpose of enabling some one to draw a salary, to help nurserymen sell their trees, to build up the prosperity of the "fruit belt," to the injury of the other sections of the state.

If the disease in question were simply a personal matter, which concerned solely or mainly the individual whose trees were affected there would be reason in the caution which is uttered.

If a person's hand or foot is affected with some disease of blood poisoning, we may urge him to immediately cause it or allow it to be removed, and if he refuses, though we are certain this refusal will cost him his life, we are constrained to submit, acknowledging it to be a personal matter, affecting mainly himself. But if, on the contrary, his disease be of a contagious nature, exceedingly liable to spread and attack others, then a due regard for our own health and lives justifies us in taking such precautions as experience dictates, regardless of the individual's refusal or remonstrance.

It is one of the great advantages of civilization that society is quietly and safely enabled to protect itself in this way, to abate a nuisance whenever public interest demands—to interpose the law to protect our endangered rights, our lives and property,—it is the opposite of barbarism, which has only personal or brute force for individual protection of life and property rights. We esteem it highly essential to maintain strict quarantine regulations to ward off disease; we do not hesitate, nor indeed should we, to adopt, if necessary, the most stringent regulations to prevent the spread of the rinderpest, cattle plague and other contagious diseases among our domestic animals. And if experience demonstrates that a vegetable disease, threatening the destruction of one of our chief fruits, is in its nature highly contagious, the same exercise of wisdom which causes us, under similar circumstances, to enact laws for the protection of our own lives and of those of our domestic animals, will suggest that we proceed in the same manner to prevent the spread of the disease in question. To the question which this correspondent asks: why not enact a law to destroy apple, pear and cherry trees affected with disease?—we answer, because they are not affected with any disease that is even surmised to be contagious, while the peach tree is subject to one known to be so. As well might he ask why not enact quarantine laws regulating consumption, etc., and the answer is the same, for the reason that consumption, etc., while very dangerous diseases, are not of a contagious character, while small-pox, for instance, is.

Peach trees are liable to many diseases that are not contagious, which are destructive in their nature, but which proper care and attention may prevent or remove, and the tree be preserved. But it must be borne in mind that for a tree affected with the yellows there is no cure, so far as known; it is sure to die, and beyond that, it is a public nuisance, inasmuch as it threatens, and if left to itself, is certain to cause the ultimate destruction of all the peach trees in the vicinity.

In removing a peach tree diseased with the yellows we are not destroying property. Such a tree has no value, its fruit is unwholesome and worthless and the tree is certain to die. We are simply abating a nuisance, removing a dangerous contagion in order thereby to save from destruction the trees which

are not affected, but which soon will be, if the diseased tree is allowed to remain. It is only the exercise of ordinary wisdom to protect our orchards from the contagion of a virulent disease for which we know of no cure.

No one has a right to harbor an element of danger to the lives or property of his neighbors, particularly, as in this case, where he cannot derive from it any personal advantage or profit to himself or to any one; his own opinion in the matter is of no consequence in opposition to the combined experience of all others. There is no use in trying to be sentimental in this matter; when anything is shown to be destructive and dangerous, the sensible way is to get rid of it. No one is injured, but valuable property is protected and saved. The object of the law, in this case, is to compel men to destroy what is of no value to themselves, but is a source of great danger and injury to their own property and to that of others.

Some men, unfortunately, are so obtuse that they would allow the stench and poison emanating from the dead carcass of an animal, or a cesspool, to permeate their own dwellings and those of their neighbors, if we could not interpose the law to compel them to abate the nuisance. And so in this case, a man may allow the borers to destroy his trees rather than take the trouble to dig them out. This, however, is his own matter; but such a man would also allow the yellows to spread among his own trees and enter my premises and destroy my trees also, and this becomes another matter; he is invading my castle and I have a right to exclude him, to force him to destroy the elements of danger.

But without a law to compel the destruction of trees diseased with the yellows, persons having orchards, however valuable, and however strongly disposed to exercise the most energetic measures to eradicate the disease among their own trees, they must, in reality, be comparatively helpless, and almost wholly at the mercy of an ignorant, obstinate or careless neighbor who allows the disease to appear and spread, taking its own course among his perhaps worthless seedling trees, and thus inoculate the orchards of the entire neighborhood.

Certainly the operation of an adequate law, duly enforced, cannot result any more unfortunately than has been the outcome of the peach interest where the yellows has appeared, and where there has been no law for the prevention of its spread, while on the other hand the law will tend to hold the disease in check, and, if thoroughly carried out, may enable us, if not to wholly exterminate the disease, to at least greatly reduce its formidable dimensions, and prevent its remaining a matter of serious alarm.

Our State Pomological Society enjoys the reputation of being a very careful, conservative body, but duly alive in the promotion of the important interests which it is organized to subserve. At the December meeting of this society at Paw Paw, the necessity of legislative action regarding the yellows was fully recognized early in the session by a vote of the society. President Lyon selected a competent committee to draft a bill for the suppression of this disease, which the society should recommend to the Legislature for its adoption. This committee, composed of gentlemen engaged in growing peaches, two of them men of well-known legal ability, one of whom was formerly also an influential member of the upper branch of our Legislature, performed this work in an efficient and thorough manner, the draft was looked over and approved by President Lyon, J. J. Woodman, A. G. Gulley and other experienced and well-informed members, and finally received the sanction of the society by being adopted as its recommendation to our Legislature. This bill was subsequently more carefully considered and examined by the committee, and finally en-

grossed and sent to Hon. E. P. Hill, of Decatur, who introduced it into the Legislature early in the session, when it was referred to a committee, where it seems to have since remained.

There is no substantial reason why the bill should not be reported and passed; it is believed to embody what experience dictates to be necessary to enable us to endeavor to stay the ravages of this fell destroyer of one of our most cherished productions. I regard it as important that this particular bill should be fully considered, because I know it to have been carefully drawn by persons thoroughly conversant with the matter, who were aware of the difficulties to be met, who knew how to draw a bill that should accomplish what was intended, one that should stand the test of the courts, if necessary, and that could be enforced. A bill whose provisions were loosely drawn might be utterly useless in a matter of this kind, lacking in some important particulars, wanting in precision, it might also easily be unconstitutional, and thus a failure.

The correspondent says let us all put out orchards, the more the better. That is precisely what we all desire, and we wish to be assured of a suitable return for our labor, so that after setting out our orchards and caring for them for years we may not have our expectations of pleasure and profit therefrom utterly blasted by untimely disease; it is the part of wisdom to adopt all reasonable measures to avoid the disappointment and possible ruin which experience teaches is sure to overtake all who embark in this enticing industry, if the only, as yet, known precaution is not firmly adopted and exercised to ward off the evil which ominously threatens its annihilation.

If one questions the ravages of the yellows and its contagious character, a journey through the peach growing sections of Berrien and Van Buren counties in the proper season will afford him opportunity for acquiring ample testimony of the fact, and will doubtless render him ever thereafter a strenuous advocate of any law which shall tend to the suppression of the disease which has caused such fearful destruction.

In earth's catalogue of delicious fruits the peach is acknowledged to be chief, and that the soil and climate of our state have proved to be so well adapted to the production of this valued fruit in its fullest and richest development has become the pride and boast of her people, one of the crowning glories of our great commonwealth. Let us see to it, by our judicious endeavors, that this precious boon does not escape from our hands; let us stay the destruction of this treasured industry that in future we may not mourn it among the joys that are passed.

Following the reading of this paper, by nearly unanimous vote, the convention adopted the following preamble and resolutions:

WHEREAS, The committee appointed at the December meeting of this society held in Paw Paw to draft a bill for the better preservation of the peach orchards of the state from the ravages of the contagious disease known as the Yellows, reported a bill for that purpose which was adopted by the society, and a committee appointed to present the same to the legislature of Michigan, to be enacted and made a law of the state;

AND WHEREAS, Said bill was introduced in the House of Representatives by the Hon. E. P. Hill, and some action taken upon it and is now pending before the Judicial Committee of that body; now therefore it is

Resolved, By this society now in session after a full discussion and careful consideration of the details of said bill that this same should become a law of this state, being very necessary, and that this society respectfully petition the legislature to speedily enact the same, and

Resolved, That copies of this resolution be transmitted by the Secretary to the President of the Senate and Speaker of the House of Representatives to be laid before these bodies.

The following resolution was then read by the Secretary, and on motion was unanimously adopted :

Resolved, That a committee of five from this body be selected to appear before the Judiciary Committee of the House of Representatives and present such facts as they deem necessary or desirable to place the entire matter of Peach Tree Yellows properly before that committee.

The President selected the following gentlemen to act on such committee : Geo. W. Lawton, N. H. Bitely, W. J. Beal, H. C. Sherwood and S. B. Mann.

The society then took a recess for dinner.

Wednesday Afternoon Session.

The first paper of the afternoon was by Nathan Shotwell, of Concord, Jackson county, entitled

CARE OF THE ORCHARD.

There is no better time for pruning the orchard, than during the months of February and March, and that important business should not be neglected. Though orchardists to some extent disagree in regard to the very best time for pruning, some preferring the month of June, and others even later in the season, nearly all agree that February and March is a good time, if not the best; and as it can be attended to at this season of the year without interfering with other important duties of the farm, that important duty should be attended to at once. The business should be at least overseen by the farmer himself, or one somewhat accustomed to the business, and not left to ignorant hired men, who often do more damage than good to the orchard. The removal of large branches should be avoided as much as possible; the center of the top kept quite open, though not sufficient to allow the sun's rays to strike any of the bare branches, and such a general thinning should be accomplished as will let in light, and allow the circulation of air. Fruit never matures well in a thick shade. It is better to go through the orchard annually, cutting out the sap sprouts, and thinning here and there as is necessary, than to allow the top to get heavy and bushy and do all the cutting in one year. Trees that have lately been grafted should be yearly pruned without fail, until the old top is wholly removed and the new cions have taken its place. Much money is worse than thrown away in grafting on account of such needless neglect.

Young grafts that are neglected and not pruned for four or five years after setting, lose their vitality and thrift; the center of the stock in which they are set more or less dies and decays, and the cions become so diseased that no treatment will afterwards make them of much value. Thousands of dollars are yearly expended for grafting in this State that never pay a dollar to the employer, for no other cause but that of after-neglect. It is useless to graft an orchard unless pruning is afterwards promptly attended to; but if proper care is afterwards bestowed, an orchard bearing worthless fruit, and even if the trees are old but the bodies sound, can be made one of the most profitable portions of the farm. It is not so much the age as it is the soundness of the trees that should govern the judgment in determining whether the trees are worth grafting. The writer has grafted orchards of thirty and forty year's standing that are now bearing as profusely as the younger orchards in their vicinity. Orchards should be well mulched and thoroughly pastured with sheep and hogs, or else cultivated without cropping. The

mulching (coarse, half-rotten manure is the best) should not be piled against the bodies of the trees, as is often done, but should be spread evenly over the roots, as much to destroy the sod as to furnish nourishment to the trees. If the soil has been exhausted by cropping, richer manure will be needed. Ashes, lime, muck, old leaves, etc., are always valuable. If the orchard is young, and just planted out, a few years of thorough cultivation is very important. Corn, potatoes or other hoed crops may be planted with profit if the soil is rich as the soil of a young orchard should be, but wheat, oats, barley or meadow should be very decidedly avoided. These crops are such absorbers of the moisture of the soil that young trees will seldom thrive while growing in connection with them.

One of the greatest losses that the fruit grower sustains in the raising of fruit for market purposes is an injudicious selection of varieties. This is a very important subject, and a subject too, that even those who have devoted some attention, and have had more or less experience in the cultivation of fruit, unfortunately, to some considerable extent, disagree. A committee appointed by the Grand River Valley Horticultural Society, as reported in the Pomological Report for 1876, report a list of seven varieties in a list of one hundred trees for winter market fruit, among which is neither a Baldwin nor a Russet, but thirty Canada Reds, ten Wageners, twenty Peck's Pleasants, ten Ben Davis, etc., while I. E. Ilgenfritz of the Monroe Nursery recommends twenty Baldwins, three Wageners, five Canada Reds, two Peck's Pleasants, three Golden Russets, etc. An orchard of one hundred trees of winter apples without a Baldwin or a Russet, in my opinion, would be very deficient.

There is no variety of winter fruit that will bear more bushels of marketable apples of the Baldwin, and their color and size usually make them command the highest price. The Golden Russet, too, is one of the hardiest of trees, a profuse bearer, and the fruit can be kept until it will bring a good market price in any season. So, too, is the Roxbury Russet, one of the very best of our long-keeping varieties. Its size, richness of flavor, excelling for cooking and cider, renders it hardly to be excelled. But the tree is somewhat tender, and the fruit quite subject to injury by the codling moth. Yet with all its failings it should occupy a place in every orchard. In fact a good line of the old varieties still stands nearly at the head of the best list of fruit. The Russet, the Greening, the Baldwin, the Talman Sweeting, the Wine, the Maiden's Blush, the Astrachan, the Sweet Bough, the Sour Bough, the Golden Sweet, etc. I refer to their places can hardly be filled.

ANNUAL REPORT OF 1878.

The secretary called attention to the report of the society for 1878 saying that 100 copies had been struck off for the members who attended this meeting. He called especial attention to the portfolio and gave an abstract of its contents, and also spoke of the two articles, prepared especially for insertion in this volume, the one by President Lyon on the "History of Michigan Pomology," and the other by Prof. Halsted on the "Origin, Structure and Function of Flowers."

The next paper of the afternoon was given by Prof. W. J. Beal, on

ACCLIMATION OF PLANTS.

In the discussion of this topic, I have started out with an unusual number of quotations from eminent scientists and horticulturists. As I proceed, you

will notice that the word denoting the subject under consideration is spelled or pronounced in several different ways.

AN ADVERSE OPINION.

Several of the first quotations are from an editorial in the *Gardeners' Chronicle*, page 492, October, 1875. He writes: "Incorrect terms are a great hindrance to the progress of natural science, because they not only convey false ideas but imply their acceptance as acknowledged truths. Now, if ever a word was unluckily chosen to express a fact or process, actual, possible, or only wished for, it is the word *ACCLIMATIZATION*. And the worst of it is, that it is now too late to make a change. Twenty or thirty years ago the world's expectations in this matter were probably more sanguine than they are at present; for endeavors made have not been crowned with the success anticipated." The author mentions *begonias* and some other plants as cases in which horticultural art has not been able to effect the slightest change in their constitutions in that respect,—they remain exactly what they were from the first. These plants were propagated by cuttings or layers. He adds, "What have the acclimators acclimated?" May we not venture to reply, 'Nothing whatever;' because, as we believe, the hardiness found to exist in plants and animals after their introduction to this and other countries, was already innate and inherent in them before they left their native shores. Their change of home has simply tested their robustness, but has not altered their constitution. Acclimatization has failed (in Britain) to make Bobbett's corn the staff of life; it has not made New Zealand flax grow as luxuriantly out of doors here as in New Zealand; it has not even acclimated the potato. With this experience of facts, may we not be permitted to doubt whether the process which we understand by acclimatization really and practically exists at all? Strange plants and animals introduced into countries, new to them, have immediately shown their fitness for the soil and climate and have multiplied and spread to such an extent as to become naturalized." Of this class of plants I may mention most of our weeds, nearly all of which are imported. In Australia, New Zealand, and many parts of South America, some of the introduced plants thrive better than the native plants and are fast crowding them out. The editorial so liberally quoted, says that the term "naturalization" would be better. "What may be effected by natural causes, in the course of millions of years, we cannot tell, what is done in the way of acclimatization by human agency during one or several human lifetimes, appears often to be infinitesimal and quite inappreciable. The original nature of plants is little changed by art. Much that has been written, and more of what is believed concerning acclimatization, is sheer fallacy. But little of actual fact can be sifted out of the masses of chaff to prove that any plant is one whit hardier than it was when first imported."

OTHER OPINIONS.

The late Mr. McNab of Scotland, was an eminent botanist and lived a long life as a most successful gardener. In 1874, in his opening address before the Botanical Society of Edinburgh, he says: "I am one of those skeptical individuals who do not believe in it [acclimatization], and still maintain the opinion that a plant is as hardy when first introduced into this country as it is after being half a century in cultivation." He gives numerous examples "to show that certain plants, although long grown in a conservatory and planted out will thrive during a series of good seasons, but will succumb after an adverse summer followed by a severe winter."

Dr. John Lindley, in Morton's *Cyclopædia of Agriculture*, writes, "That cases in support of this view are not numerous, however plausible the theory may be, and it may be doubted whether in fact any one example of acclimatization, in any considerable degree, if at all, can be produced."

The editor of the *London Horticultural Magazine* writes: "We deny that a seedling can be rendered more hardy than the parents; although we do admit that seedlings may be more hardy than their parents." Cases of some seedling dahlias and potatoes are cited as examples; that is, some of the seedlings will endure more frost than others." He adds: "The question of acclimatizing plants, therefore, is only tenable if we put another construction on the word, and instead of using it as meaning the making a plant more hardy than it naturally is, use it in the sense of proving how hardy a plant naturally is, for such is all we can do."

THE TERM DEFINED.

"A. R. W.," probably A. R. Wallace, in the *Encyclopædia Britannica*, says: "Acclimation is the process of adaptation by which animals and plants are gradually rendered capable of surviving and flourishing in countries remote from their original habitats, or under meteorological conditions different from those which they have usually to endure, and which are at first injurious to them. The subject is very little understood, and some writers have even denied that it can ever take place. It is often confounded with domestication or with naturalization. Perhaps in most cases of naturalization there is no evidence of a gradual adaptation to new conditions which were first injurious, and this is essential to the idea of acclimation." The author goes on to say that "It is evident that acclimation may occur (if it occurs at all) in two ways, either by modifying the constitution of the individual submitted to the new conditions, or by the production of offspring which may be better adapted to those conditions than their parents. The alteration of the constitution of individuals is not easy to detect. Habit has little (though it appears to have some) definite effect in adapting the constitution of animals to a new climate; but it has a decided, though still slight, influence in plants, when, by the process of propagation by buds, shoots, or grafts, the individual can be kept under its influence for long periods. In most cases, habit, however prolonged, appears to have little effect on the constitution of the individual, and the past has no doubt led to the opinion that acclimatization is impossible."

TESTIMONY OF PROF. DARWIN.

I next make some extracts from the writings of Charles Darwin. He calls it "the much disputed subject of acclimation," and says: "The attempt to acclimate either animals or plants has been called a vain chimæra. No doubt the attempt in most cases deserves to be thus called, if made independently of the production of new varieties endowed with a different constitution. Habit, however much prolonged, rarely produces any effect on a plant propagated by buds; it apparently acts only through successive seminal generations." On the whole, he concludes that "habit does something towards acclimation," even where the plants are propagated by budding, layers or cuttings. As an illustration he mentions that vines taken to the West Indies from Madeira have been found to succeed better than those taken directly from France. This is the only example I can find.

Darwin and Wallace, and the editor of *Nature* use the term *acclimatization* in a broader sense than it is used by editors of the *Gardeners' Chronicle*, the

editor of the Garden, the editor of the London Horticultural Magazine, Dr. John Lindley, or Dr. McNab, of Scotland. The former set of authors believe that it is a legitimate part of acclimatization to produce new hardy varieties, races, or hybrids from seeds.

EXAMPLES OF ACCLIMATION.

In this broad sense, every one must certainly believe that most plants, if not all can be acclimated in a climate more or less uncongenial to them. One of the most remarkable cases of this kind is Indian corn. All of our races of corn have evidently been derived from one species. We have numerous varieties of pop corn, sweet corn and field corn; corn with long, pointed kernels, or with round kernels, or indented kernels. We have kernels which are hard or soft, red, yellow, white, violet, black or striped. We have ears with eight rows of corn, and from this up to thirty or more. We have ears of corn varying in length from one inch to fifteen or sixteen inches, and stalks varying in height from twenty inches to sixteen or more feet. We have in the United States corn which will ripen in ninety days, and other varieties which require in the warmer sections six or seven months to mature.

The cabbage (*brassica oleracea*) also varies much, and has produced all sorts of cabbage, early and late, all sorts of cauliflower, broccoli, kohlrabi, etc. The list of grains, vegetables and flowers might be indefinitely extended. The examples of a difference in the hardiness of seedlings of trees is also familiar to all of us. The Baldwin and Large Yellow Bough are tender in many portions of Michigan, where the Red Astrachan and Ben Davis are hardy. Examples might be given of a difference in the hardiness of pears, plums, cherries, peaches, grapes, blackberries and other fruits. The same thing was long ago noticed in the hardiness of seedling oranges in Italy. The previous example and the next example are taken from Darwin's "Animals and Plants under Domestication," to which all are directed if they wish for further illustrations.

Mr. Grigor states that seedlings of the Scotch fir (*Pinus Sylvestris*), raised from seed from the Continent and from the forests of Scotland, differ much. The difference is perceptible in one-year-old, and more so in two-year-old seedlings. Closely similar facts have been observed with seedling birches. Pomologists of Iowa and Minnesota are raising seedling fruits some of which are harder than the parent plants.

AN OPEN QUESTION.

In striving to obtain seedlings better adapted to any peculiarity of climate, I cannot find that any experiments have been made to decide the following point: Shall we plant seeds raised in a more congenial climate, or shall we be more likely to gain the point desired by planting seeds raised in the climate for which we want suitable trees or shrubs? I should expect the results would be more favorable by planting seeds grown in the same locality, or, still better, in one with a similar climate a little distance away, provided the seeds were from tolerably well-grown and healthy specimens of fruit.

Before closing, I will briefly refer to the matter of attempting to acclimate specimens of trees or plants. For example, we often hear people speak of acclimating a certain individual young evergreen tree. As we have seen, there is probably no such thing as acclimating a single tree or plant. We can plant it in the most favorable spot at our command. The soil should be of suitable texture and well drained. The cultivation should be such that the tree may

grow at a moderate rate and mature well. A young tree generally grows faster than an old one. It is more likely to be injured by extremes of heat, cold, drought or moisture than a tree which has become established and has arrived at the prime of life. We may shelter or otherwise protect a tree while it is young, and thus carry it through the most precarious part of its life. This is almost always done with seedling evergreens. When well established they may be allowed to take care of themselves. This early nursing of trees is not acclimation.

President Lyon.—Whether technically there is any such thing as acclimatizing plants, the fact is pretty well understood that plants become adapted to certain climatic conditions by following certain methods of caring for them. There is another matter connected with this subject that is worthy our attention. It is the selection of seed to produce the best plants. The thought has come to me from certain experiments performed by Mr. Downer and Mr. Hathaway in the production of new varieties of strawberries. Mr. Hathaway, I think took fully as much pains with his work as Mr. Downer and still the latter brought out several fine seedlings, while Mr. Hathaway brought out but one of value. My impression is that the difference lies mainly in climate; the seasons of Kentucky are more favorable to the perfecting of the species than those of Michigan; and it occurs to me that this is worth our consideration in developing any sorts of plants by means of seed. We should seek such a climate if possible as is the best adapted to the plant. A corollary to this might perhaps be added that is already taken advantage of by foreign seed growers—plants set apart for seed growing with the view of developing a better strain should at the time of seeding be subjected to the most favorable circumstances and conditions. A common example of climate affecting seed, is that of Indian corn; in the north it gradually deteriorates, while farther south where it is naturally adapted we may look for the best opportunities of perfecting the seed. If the germ of vigor is in the germ of the seed it is important that we make that seed as healthy and vigorous as possible.

Mr. F. A. Gulley next occupied the attention of the convention with a paper giving answer to the query,

SHALL WE USE HEDGES FOR FARM FENCES?

In the report of the Secretary of the State Board of Agriculture for 1876, Mr. John P. Finley of Ypsilanti gives some statistics and estimates, of the cost of fencing in Michigan. I copy the following: There are 32,000 miles of road fences in the state, that cost \$10,000,000. The estimated cost of fences in Washtenaw county, in 1874 was over \$2,000,000. He finds that fences cost the farmer more than twice as much as his taxes.

I give these figures merely to show how important this matter of fencing is. Although we cannot dispense with fences altogether, we might get along with less.

We must get rid of this notion of fencing out other men's stock, and only fence in our own.

It is a wrong idea or custom that compels the people of a township to build thousands of dollars' worth of road fences, just for the sake of fastening out a few cows and half starved calves, for an occasional family who must keep a cow, but own no land, and are too poor to hire pasturing. With great sympathy for the unfortunate, and believing it the duty of every one to give a weaker brother or sister a helping hand, I can't help feeling that neither charity nor generosity

demands that the highway should be given to the poor for a public pasture. Having had ample opportunity to study the practical working of the road pasture, I concluded that if the time spent by hunting up their cattle, by some families, were put into some kind of honest labor, it would pay for pasture.

If there are families who cannot live without keeping a cow in the road let them be helped by private enterprise, or by the town authorities. I fail to appreciate the pride that will not permit a man to ask for, or receive aid in this way for his family, but who would keep a cow in the public road and compel a whole neighborhood to keep up expensive highway fences, and not allow the planting of shade trees, and render every man liable to loss if a gate should happen to be left unlatched, not only by destroying crops, but fruit, and ornamental trees, that may have required years of attention. I have seen the improvement and ornamentation and consequent increase in value of a whole neighborhood, prevented, where it was the common desire, just to allow a few families to keep their miserable cows in the road, a nuisance to every one. It is safe to say that every cow running in the street in well settled portions of the state will destroy every year five times enough to pay for her keeping.

HEDGES.

In speaking of hedges, I refer merely to the hedge as a fence. Will it pay to plant hedges for this purpose in Michigan? Nurserymen and tree agents are making quite an effort to induce the honest Michigan granger to invest in hedge plants. They depict in glowing colors the fence of living green, "a thing of beauty and joy forever," horse high, bull strong, and pig tight. Notwithstanding the "agent" has done much to build up the farming community, a farmer might do worse than to adopt the following rule and live up to it:

Never buy anything of any traveling agent.

I have seen beautiful hedges as dense and solid in appearance as a stone wall, as straight as an arrow—every line perfect, in pictures in the agent's book, representing how the various plants they sell *should look* in four or five years after planting, and have also seen hedge fences patched up with rails, and stumps, and stones—a protection against nothing—on the ground, showing just how they *do* look in four or five years after planting. Hedges for fencing, and belts of shrubs or trees for wind breaks, are not to be confounded. It may be advisable, and prove profitable and certainly ornamental, to plant occasional belts or clumps of trees wherever there are open spaces extending over one mile in each direction, as a protection against sweeping winds.

In regard to ornamental hedges for parks or gardens, cost is not considered, and although they may be used as barriers or boundaries, and add greatly to the attractions of the rural residence, and pay the owner, by adding to his comforts and the satisfaction of having a beautiful home, they are not farm fences, and we will not consider them included in our subject.

We wish to discuss this question and weigh it in the same balance in which nine-tenths of us weigh almost everything else; sometimes even men. I would place in the balance against it the "almighty dollar," and the one great question would be, which would the descending dollar raise the most of, taking everything into consideration, hedge or fence?

I have been looking over the files of several agricultural papers to see if I could find any comparison of the cost and utility of the two, but did not get much information. In the eighth volume of Rural Affairs is a well written article by C. G. Taylor of Galesburgh, Ill., in which he recommends Osage

orange for hedges in that state and Iowa. Mr. Taylor gives the following figures as to the cost of growing a good hedge, and says they are based on his own experience, and will represent about the average cost of 160 rods:

Preparation of ground before planting.....	\$3 00
2,560 plants set one foot apart at \$3 per m.....	7 68
Preparing ground and setting.....	3 75
Cultivating five years, four dollars each year.....	20 00
Trimming second year.....	3 00
Trimming third year.....	4 50
Trimming fourth year.....	6 00
Trimming fifth year.....	7 50
Trimming sixth year and plashing.....	12 00
Total.....	\$67 43
The interest on the amounts expended each year, at seven per cent per annum, will equal.....	\$8 57
A low estimate for use of the land for five years would be.....	4 00
A total of.....	<u>\$80 00</u>

For 160 rods, or 60 cents per rod.

These figures are for the plan of plashing, that is, the plants are grown like miniature trees, and trimmed so that at five years old they resemble a pole about six feet high with a bush on top, and diameter of the butt from one and one-half to two inches. The small trees are then hacked half off near the ground and bent over in the direction of the row, every fifth tree being left to hold them in place, and cut off even with the top of the hedge. The sprouts from the hacked stumps, and leaning trees grow in together, making an impenetrable barrier.

This is about the only style of hedge that is found to be really a success, and cattle and pig proof.

If this hedge is planted on the road, or where stock runs, it will need to be protected by a fence till fully grown. We must also remember that Osage orange is not proof against our cold winters over a large portion of the state.

A five board fence will cost about as follows through all the southern or central parts of the State:

For one rod, two oak or cedar posts.....	\$0 25
5 boards 1x6x16½=42 feet, @ \$10 per thousand.....	42
Nails.....	3
Making cost of material.....	\$0 70
Building, 15 cents per rod.....	15
Total cost, per rod.....	<u>\$0 85</u>

Or 35 cents more than the hedge, for a good board fence.

The fence will last fifteen years on ordinary soil. The hedge will require trimming once or twice a year. The cost of the care of the hedge, even if we consider it a permanent fixture, will, for the time the fence lasts, rebuild the fence.

Honey locust seems to be hardy in this State, but having planted 160 rods two years ago, and kept watch of some planted three, four and five years since, I doubt if it will make a stock-proof fence in the way it would ordinarily be grown by farmers.

In a discussion on the merits of the honey locust at the meeting of the Western N. Y. Farmer's Club, April 4th, 1877, it was generally condemned for not turning cattle. Some eight or ten years ago there was a great furore over willow hedge, a good deal was planted near where I lived. It would not turn stock, and was a failure and nuisance for everything but a wind-break, being a rank grower, and strong feeder, it spoils the ground for crops for two or three rods on either side. The taking up of so much ground and the trouble of keeping down grass and weeds must be taken into account when comparing a hedge with a fence. Again, if a hedge is planted on the line between two farms, each man has control of but one side, or each may take a portion of the whole. In either case, there would be no use in one man's keeping his part better than the other, and if either was negligent the whole would be a failure.

If we use hedges for dividing up the farm into fields there is not only a possibility but a probability that in time a change in the fields would be desirable. If we take up the hedge the work of years is lost, while if it is left it may be a great inconvenience. A fence could be moved.

There is one great objection to the hedge even if it should prove hardy, effectual, and cheaper than the fence. To make it a success it must receive careful attention for five or six years before we get a fence. A fence is finished at once, while a hedge may become "an old story." Few farmers will give it the necessary care.

It is an easy matter for the agricultural editor to sit in his study and tell the farmer how to grow a hedge, to set it in just such a way, to trim it at just such a time: or in farming to systematize his work, do everything in season, drain, cultivate thoroughly, and carry on farming as the manufacturer does his business, having everything move like clock-work, and he can't help but make money. System is a beautiful delusion in the brain of him who thinks he can systematize farming as he can other kinds of business.

Those of us who have had actual experience in farming, that is, depended on it for a living, know that system, although a good thing, can't always be lived up to. It will rain frequently for days when crops ought to be in, or weeds are smothering the corn or roots. There will be a drouth just when one good shower would save the crop. A late frost will nip the early crops, an early frost the late ones. A hail storm in July may cut off half of the intermediate crops, and the insects will fight over what little is left. A horse will get lame or sick in the busiest season when we can't borrow, and have no money to buy.

The best plans and intentions of the farmer, and the most elaborate system, are ropes of sand when dame Nature gets "on a lark," and all ornamental work and permanent improvements must stand aside that the crops may be taken care of, that the family may live.

A gentleman travelling through the west, after seeing miles and miles of hedges, writes that one that would turn stock without being patched up with rails and posts was a rare occurrence, and that not one in fifty was a perfect success, and largely from neglect. We must base our calculations not on what we can do, or might do, but upon what we probably will do.

Another objection to the hedge or any tight fence by the side of the road is that it makes the road almost impassable in the winter on account of snow

drifts. In some places they advocate the removal of fences during the winter on the west side of the road.

I wish to call your attention to a kind of fence that costs less than the hedge, requires no care after being put up, can be removed or changed as easily as any portable fence, and offers no obstruction to the snow. I refer to the barbed wire fencing now being so extensively used all through the west. The only serious objection to it is that stock are sometimes injured by running against the barbs. I put up 100 rods of it two years ago, part of it on the road, to keep out cow tramps, who could get over, under or through, any fence where they could find a hole big enough to stick a horn in, and it was effectual. Three barbed wires were sufficient. Our own cattle and horses ran in the field all summer, and so far as I know were never scratched. A neighbor set his savage dog on his colts one day soon after the wires were put up, and they not being able to see the small wires ran into it and were considerably gashed up, but it was the man's fault. By attaching a wooden strip to the upper wire so that stock can see it, I think there would be little danger. I would not advise farmers to go into this fence extensively, but give it a trial on a small scale.

FOR A PERMANENT FENCE

I would build it as follows: At the ends I would set good solid pine posts and brace them so that they would not be drawn over; and also put an ordinary fence post every twenty-five rods. I would fasten the ends of the wires to these posts, having it in sections of twenty-five rods, so that the expansion and contraction of the wire in hot and cold weather would not strain it so much as it would if the wires ran the whole length of the fence.

I would saw or split from oak logs stakes six and a half feet long and about three inches in diameter, and punching holes with a crow-bar, drive them in with a beetle one rod apart for the other posts. If they should heave during the winter they can be easily tapped down in the spring when the ground is soft. The wire is fastened to the posts by driving a small staple over it, using three wires, the first fifteen inches from the ground, the second thirty and the third forty-eight inches. I would get light strips two or three inches wide and hang or fasten to the top wire with small wire. The ends of these strips might be fastened together with a wrought nail or bound with wire, and a nail driven through into each post to keep it from swinging and rattling.

The cost of 100 rods would be about as follows:

Five pine posts at 10c.....	\$0 50
Three hundred and two rods barbed wire at 11c.....	33 22
Four hundred and twenty-five feet 3-inch strips at \$10 per thousand....	4 25
Ninety-six stakes at 5c.....	4 80
Five pounds staples at 10c.....	50
Small wire and nails.....	1 25
Building 100 rods at 4c.....	4 00

Total\$48 52

Or forty-eight and one-half cents per rod.

FOR DIVISION FENCES

I would use only the small posts, and for cow pastures only two wires without the strip as soon as the cattle become accustomed to it, making a fence all complete for not more than thirty cents per rod. To take up this fence the staples are pulled out, and the wire rolled up on a reel.

It will not hold young pigs, even if the wires are four inches apart and the posts set every eight feet; neither will any ordinary hedge.

Whether we use boards or wire, I believe either will prove cheaper and better in the end than any hedge we have as yet.

L. B. Potter, Lansing.—A trip across Illinois about the latitude of Galesburg, will reveal to any man one side of the hedge question, and if he has any appreciation of elements which detract from the beauty of a country, he will take exceptions to the patched hedges. I enjoy a view of a nice farm hedge as well as any one, but when it comes to practically securing such an one in our latitude, there are many things in the way, to such an extent that a farmer will not succeed in getting anything of value.

Mr. Sturgis.—I can but agree with the gentleman, from the experience of a trip taken last season through the west, as far as osage orange is concerned. All the hedges that I saw through northern Illinois, were simply eye-sores on the face of the country; but not so through southern Illinois, where this hedge plant was more at home. There I saw as beautiful lines of hedge as I ever expect to behold, and still, with the most perfect of them I found fault, as a visitor of the country, for their height obstructed the view and shut off portions of the country. I think there is no doubt but with proper plants, and the required attention, hedges may be made even in this country, which if plashed will make tight fences; but for all this I very much question if it is advisable for us to grow them.

Mr. Selover, Coldwater.—Perhaps a bit of my experience may have as much influence in the way of argument as an opinion. Nine years ago I started an osage fence. I took the seed in the spring of the year, scalded and planted it, mulched the plants and gave them the best care I could without knowing anything of the business. I have a hedge now of considerable length, that will satisfy the most critical of these gentlemen I think, and perhaps the secretary will certify, as he has already, that my hedge is a success. This experience has been valuable to me. I could do better now in making a hedge than before. I have 250 rods of this fence. It is not all pig tight, but perfectly answers my purpose. From the record of various thermometers given here, I must admit that it has been a good deal colder in Branch county than they say it has been away up north several hundred miles toward the pole—and these statements somehow do not seem to tally with the ideas of some of the gentlemen about the hardness of the osage plant, but with all our cold weather I am satisfied we can successfully grow osage orange hedges in Branch county.

W. A. Rowe.—No matter how much care we may give the osage orange hedge, the fact stares us in the face that at any time we may have a severe winter when portions of it will be frozen to the ground.

E. LeValley.—I have had a long experience in Ionia county, and have given osage orange hedge a fair trial and found it wanting. It can not be depended on at all. I would substitute for it (and have adopted the plan myself), the

planting of butternut trees sixteen feet apart, which shall answer for fence posts, and then use barbed wire and staples. I am satisfied that this will prove a valuable substitute for hedge fences.

President Lyon.—I agree with Mr. Gulley generally pretty well that the facts prove that hedge fences on farms are not a success, but I attribute the want of success to the men rather than the fence material. If hedge fences are properly grown and cared for they will be a practicable improvement because they are economical and answer a good purpose. We are by no means confined to the osage orange in our selection of a plant for hedge purposes. It is a plant indigenous a good distance south of here, and we must not expect much of it in our latitude, subject as we are to severe winters. The honey locust is a native of our State, and I believe has the principal qualities of a good hedge plant. We are trying it at our place, and have a line of hedge which I think would satisfy any of you in its perfection. We have placed it as a shield between the nursery and the lake, and although young, the bottom of it is close enough to forbid the entrance of very small animals.

Mr. Johnstone, Detroit.—We do not succeed with hedges because we are not practical hedgers. It is all nonsense for a man to purchase a few thousand plants of most anything recommended by a tree agent and set them out expecting to awake some morning and find he has a hedge that will turn cattle. I have been about a good deal and have found here and there a successful hedge in spite of climate or locality. Why? Because the grower understood his business. When the average farmer knows how to grow a hedge as well as he knows how to grow corn, he can grow a hedge successfully, and I am satisfied under proper treatment and in some situations the hedge fence is economical and satisfactory. I would not condemn the use of hedging because we scarcely ever find in our country a good hedge, neither would I recommend it for all places because I am an advocate of its use. There is a middle ground where I stand on this subject, and I do believe that here in Michigan under some circumstances farmers can make hedges not only profitable, but by bringing the requisite amount of experience to bear, they may be made beautiful. Let us not take too radical ground either way.

Mr. Guild.—I am in favor of employing evergreens for hedge fences, and believe it is practicable to secure an evergreen hedge that will be a good farm fence, and withal, be an ornament to the country, and not be in danger of injury by severe winters.

George Taylor.—Evergreens are beautiful and appropriate for hedges, but when I say they will not do for farm fences, I speak from the position of experience. I think Mr. Johnstone and Mr. Lyon hit the nail on the head. The trouble is not in the climate or the principle of having hedges, but on the men and on the choice of plants. With hardy plants in proper hands, farm hedges can be made profitable and thus far we have not the experience in this country to successfully grow these fences. Men need to study this matter as thoroughly as tree growing, or fruit growing, then we shall have a race of practical hedgers who will succeed.

Mr. Gulley.—I would like to ask Mr. Johnstone what experience has done for the matter in the eastern states? Are they growing more and better hedges there than fifty years ago, or are they not gradually giving up the business?

Mr. Johnstone.—I will simply say that the east are no further along than

the west in this matter. Their experience has been lost because it has not been improved upon.

Mr. Lyon.—The fact is that in the east they have not the need for fences that we have, and hence the question does not arrive at such importance. Their laws restrain stock, and they really do not need the hedge experience that would be valuable to us.

Mr. Merriman.—Really are we not rapidly getting toward a similar condition of things, and would not a law of this kind enforced be of more practical value than experience in hedge fencing.

Mr. Gulley.—I would really like to get at the sense of this meeting upon this hedge question, and for that purpose offer the following:

Resolved, That the Michigan State Pomological Society recommend the planting of hedges for fences in Michigan.

After a sharp discussion the resolution was tabled until the June meeting.

The secretary then read a very earnest invitation from the Oceana and Lake Shore Pomological Society for the State association to hold its summer meeting in Pentwater.

Referred by motion to the executive committee.

The next topic for discussion was in the form of the question:

SHALL WE AIM TO GROW LARGE APPLES?

Mr. Guild, of East Saginaw, said:

Just the reason why the society should select me to lead in this discussion I cannot tell, unless it is that I, having a large capacity to dispose of extremely large specimens of fruit, and in having such would of course take the affirmative. But of the question, shall we grow large or small fruit, I would hardly think there was but one side. If we go to any market to buy fruit, vegetables, or anything else, do we select the small or inferior lots, or do we look over the whole stock to get the largest and nicest. If you place one large apple in a dish with several inferior ones of even far better quality, which is selected first, unless it should be passed for mamma's sake? If we place two or more plates of fruit upon show, how many encomiums of praise will be bestowed upon those of inferior size, even if they are of a far superior quality. Why do we pack on the bottom of the barrel in regular order all the largest and finest specimens? and when the barrel is all packed is not the head with all these elegant specimens marked with large letters to show to the merchant which head to open when the fruit is exposed for sale? And why does the dishonest dealer pack all the small specimens in the center of the barrel where they will be the least exposed to the view of the purchaser? Is not this state of things carried out in everything, and with all classes. Does not the young and sprightly girl put on her best bows and take the greatest pains when she expects her young fellow on Sunday evening, and if all this is done to please the eye, why should we try to change this order? Have we been traveling in the wrong path so long and just found it out? I think not. I confess that it may at times be carried too far; that dishonesty may creep in, and by our actions we may countenance great wrongs, but certainly such notions cannot be attributed to us if we try to stimulate each and all to excel in what they undertake. If we wish to raise fruit for the market, we certainly

wish to make as much money as is possible in a legitimate way, and in order to do this we must raise that which will sell for the highest price. Why, I would ask, are so many experimenting with new kinds of fruit to get something which excels all that has been produced before in quality and size, especially the latter, if not to cater to the public taste and make a goodly portion of that which is classed as the root of all evil, for which we are all seeking and striving, some unto death. Have we one among us who is so charitable and so benevolent that he will spend his time and money for the good and pleasure of others? If so, it would be a pleasure to behold his smiling countenance; he might raise small apples of superior quality for the benefit of the poor. But I digress. No farmer in this enlightened and progressive age and country would be considered sane who sought small, inferior seed, or bought small, inferior breeds of cattle from which to breed his stock. Neither would we consent to the raising of monstrosities or overgrown specimens of any variety; but we should not consider extra size a defect, other things being equal, or discreditable either in fruit, vegetables or stock.

We should seek to stimulate by all honorable means the growth of large specimens of high color and free from all blemishes, of good quality, for such is a very sure indication of healthy, thrifty trees, with rich soil and good cultivation. No intelligent orchardist would be satisfied with any other results, when he knows that in the markets large size, high color and perfect forms are never objected to, but bring the highest price and quickest sales.

Heavy crops of large fruit every year will not tax an orchard as much as great quantities of small inferior grades on account of the seed, as stated by Mr. Merriman, at Paw Paw, in this discussion which he explained very fully and need not be gone over again here; nor do I think it necessary to present any new arguments in favor of large size, as, Mr. President, it is a very hard thing to prove a self-evident fact by superfluous argument.

L. B. Potter.—I scarcely understand the question. If it means to inquire whether we shall raise large or medium varieties, I should certainly say raise the medium varieties; but if the query refers to apples of a given variety, I should say raise the largest ones you can.

Prof. Beal.—I have had my say upon this matter, and have no reason to change my opinion. In different States the ideal apple of a variety varies; for instance the prize Greening of New York is smaller than the ideal Michigan Greening, and again, the same apple grown in Nebraska is larger than when grown in Michigan. I think we will all agree that other things being equal, an apple loses nothing by being large, but when we get the mammoth apples we are not liable to find the other things equal.

Prof. Whitney.—Just so. I have a case in hand. Here are two plates of Baldwins just taken from the exhibition tables. The larger ones are a fair instance of what the tendency is when we regard size as paramount to everything else. They are coarse grained and do not bear handling like these medium sized apples. The apples for market are certainly the medium sized ones. They are better to ship, and the buyers will select them in preference to the very large ones.

Mr. Gulley.—What market does the gentleman refer to?

Mr. Whitney.—I had in mind the Chicago market.

Mr. Gulley.—Does he mean to say that his experience in the Chicago market would lead him to the opinion that the plate of smaller apples which he now refers to would be picked up the quickest at the best figures?

Mr. Whitney.—Yes, sir.

Mr. Gulley.—All I have to say, then, is that Chicago people discriminate differently from Detroit buyers.

Mr. Merriman gave as his opinion that the Chicago market was not different from Detroit in that respect. He had seen the largest apples given the preference hundreds of times.

N. H. Bately.—My experience has all been in accord with Mr. Whitney's in the marketing of apples. The medium apples aggregate the most money with less risk in transportation.

Mr. Selover.—My apple orchard is the most productive part of my farm annually, and the medium apples are the ones for the market or the table every time.

Mr. Johnstone.—I like large apples, and I want them good ones too. It seems to me from long observation of the market that we do not run any risk in growing our apples as large as we can, provided we grow the proper sorts. I am willing to take my chances with the big apples provided I can make the choice of variety. But on the other hand, whether the apples are large or small, I am satisfied their quality depends in large measure upon the soil where they grow. I find the same sort varies in quality with the land upon which it is grown.

A. L. Sturgis.—My conviction is that with a given soil and a given variety we should aim to grow as large apples as possible, and we shall lose nothing in character by the increase in size.

Pres. Lyon.—The question may turn upon where our market is to be. If we are to sell our apples near at home perhaps the large specimens will bring the most money; but in case we are to send them to Liverpool, London or Paris, we would make a great error in making the attempt with our larger apples. Apples for these markets should have that firmness of texture which is found in the medium or even smaller apples, to withstand the knocking about incident to long transportation.

Mr. Potter.—Perhaps the matter of wind should be taken into account. The ratio of destruction from this cause must be very much less with the medium apples.

Mr. Hewitt.—I am rather led to believe that we can succeed better in the market with the medium apples; but it seems to me that a very important practical question is: How are we to so accommodate our conditions as to grow the most barrels of this kind of apples?

S. W. Dorr.—I believe in thorough cultivation. The better culture the larger apples; the larger apples the quicker market, and the quicker market the fuller pocket.

The next discussion was upon

METHODS AND ADVANTAGES OF COLLECTING AND PRESERVING INSECTS.

Prof. Cook's opinion was given as follows:

Very much of the improvements in the practical arts during these last few years has been due to close and accurate observation. Without this all experimentation is of little or no value. To it science, the greatest blessing ever received by the practical man, owes its very existence. Few persons realize how much the world owes to the great Bacon for founding the inductive system

of philosophy. Yet the very foundation of this system is observation. It has been said that Franklin would see more in crossing the English Channel than most men would in making the entire circuit of the globe. How significant this fact in consideration of Franklin's great and valuable discoveries in science! Mayer, of Germany, noticed the rank growth of clover growing along the pathway where the stone-cutters in the gypsum quarries passed daily to and from their work. This observation gave to the world one of its most valuable fertilizers. One of the most successful farmers and wheat-growers of Michigan told me that in growing his pioneer crop of wheat he observed limited areas all over the field where the wheat was much heavier. He also observed that each of these places was the site of a tree previously blown down by the wind, which brought up the heavier sub-soil. He then learned to plow deep. His less thriving neighbors have lived by his side for forty years and have yet to make this practical observation. How many of the intelligent pomologists of Michigan have in their mind's eye an accurate photograph of a single one of the thieving insects that are working so successfully to pilfer from them their choice fruits? Who can doubt but that an accurate knowledge of these facts, based, as it must be, on a quick and well-trained observation, would do much to fortify our fruit growers against these pests of the garden and orchard?

I hope in these papers, by explaining the requisites and methods necessary for preparing insect cabinets, to induce some of those who read them to engage in the pleasant and valuable pastime of making collections, or if not that, of encouraging their children to do so. Such recreation will prove most healthy and valuable for the young, and if practiced will raise up a body of trained observers that will be able to do far more valuable work, as they take our places as farmers and pomologists, than we have done.

WHEN AND WHERE TO COLLECT.

The entomological collector need wait for no time or season. In winter and at midnight, no less than in summer and at noon-day, his quest, if guided by intelligence, is sure to be rewarded. Many beetles lie concealed in winter beneath leaves; others, together with bugs, moths, chrysalids and eggs, quietly wait under log, board, stone or rubbish for the warm springtime. Cocoons and egg clusters hang pendant from branch and shrub, or are snugly hid away in crevice and nook. In winter, too, we find leisure to study, label and arrange the previous year's collections. In spring, from the earliest warmth, when "first the lone butterfly flits on the wing," when the streams are crowded with the swift swimming larvæ of the lace-wings or day-flies, and when the little frail lace-wings even dart to and fro above the snow drifts, on to the steady warmth of early summer, when air and sunshine are alive with insect life, we revisit with greater success the places that rewarded our search in winter, and further stroll along barren sand drifts, sweep with our nets the grass and bushes along the meadow and roadside, jar bush and shrub above our open umbrellas to capture the small but often rare and beautiful beetles, and the rich and wondrously varied caterpillars and other larvæ, attractive prophecies of still more attractive moths and butterflies. We visit the bright and sweetly-scented flowers of gardens, fields and woodland—for insects have an eye, and a nose, too, for just such flowers—where we are sure to secure the brightest gems of insect life. The resplendent moths and butterflies, and the glistening metallic beetles, bees, wasps and flies are sure to reward our visits to these,

nature's fairy-lands, made doubly so by the very fairy-like creatures which we are so eagerly seeking. As the warm nights of summer come on, the collector visits the previously sugared boards hid among the foliage, and is made joyous by the capture of our beautiful noctuids or night-flying moths, which are not only the gems of night, but as truly of the collector's cabinet. Nor have we to stop here, for with the dredge net we may repair to the pool, stream or morass in successful quest of the strange larvæ and pupæ of the dragon-flies and other neuroptera, and the boat-like beetles and bugs, while the maggots of our mosquitoes, and many other of our most curious diptera, will also be added to our collection. If perchance we take a row-boat to bear us over the waters of any of our great lakes, we can gather up from the surface of the water many rare weevils and other beetles that have been blown over the water, and, too tired to fly longer, have given themselves up to the waves. On resinous buds and viscid leaves we may also find insects; around carrion and all kinds of filth, from the ordure of our stables and the various kinds of decaying organic matter to mushrooms and other fungi, as well as about the oozing sap from wounded trees, we can hardly ever look in vain for insects, and often from the most repellant and disgusting matter we obtain the rarest and most beautiful specimens. Sometimes the collector makes rare captures in the stomachs of insectivorous birds. Such additions are none the less welcome, though taken at second hand. In the various grains and fruits that are attacked by insects, and also in the solid trunks of trees and in the numerous galls so widely scattered on herb, shrub and tree, are to be found insects as varied and curious as the locations harboring them. In all the places last mentioned the insects may be taken in their various stages, may be reared and studied, and to the careful and attentive student will furnish information, not only new to himself, but often, very often, new to science.

THE COLLECTOR'S OUTFIT.

The apparatus necessary in the capture and preservation of insects is more simple and inexpensive than that needed by the collector in any other order of animals. The ease, safety, and cheapness of transporting specimens, when collected away from home, when sent to specialists to be named, or when it is desired to make exchange of specimens for the mutual advantage of collectors, as well as the small space required even for extensive collections, and the ease and safety of preserving the treasures of our cabinets, specially recommend this field to him who would become familiar with the glories of nature, who desires the most wholesome recreation and who wishes so to employ his spare moments that he shall gather a rich harvest of valuable knowledge for himself and for others.

The collector's apparatus may well be considered under two heads: that for making the collections and that for preserving them.



FIG. 1.

CYANIDE BOULE.—SIDE REMOVED TO SHOW CYANIDE *a*, AND PLASTER OF PARIS *b*.

APPARATUS FOR COLLECTING.



Nothing is more serviceable to the entomological collector than the cyanide bottle; for, once in it, all insects soon die, and all except the most delicate moths may be left in it for some time if care is taken to carry it carefully, so as not to shake the insects. The bottle, Fig. 1, should have a large mouth, a glass stopple, and is prepared as follows: After placing a lump of cyanide of potassium, the size of a nutmeg, in the bottom, Fig. 1, *a*, turn in a thin mixture of plaster of paris and water till it reaches at least a half inch above the cyanide, Fig. 1, *b*. This will soon set, and the bottle is ready for use. By having the plaster of paris thin we usually secure a smooth bottom to our bottle. If from bubbles or other cause it is not so, we must rub it till it is. Any roughness is sure to injure delicate specimens. Care must be taken in handling the cyanide, as it is a quick and terrible poison, alike fatal if eaten or inhaled. The fumes in the bottle, though quick death to the immersed insect, are harmless to the collector, if used with even respectable care. The poisoned air of the bottle is as disagreeable as unwholesome, and will not be inhaled for any considerable time, except by him who finds this present life "flat, stale and unprofitable," and

in this class the entomologist is never to be grouped. Every collector will need at least two of these bottles, one to receive the specimens, after they are killed, or appear to be, the other to put over the specimen as it rests on board or ground, or to receive it from the hands or net. The insect will move about for a minute or two, and had one not removed the previously captured insects, it would be liable to serious injury, especially if moth or butterfly. Several bottles of varying sizes will be found very convenient.

Small bottles containing alcohol, and carried in a pocket case, are very convenient and desirable. In these may be kept temporarily or for a long time, larvæ, pupæ and such mature insects as bees, wasps, beetles, bugs, locust, etc., which will not receive injury by such submersion. All insects become brittle if kept long in alcohol, and may lose their bright luster.

Numerous small wooden boxes are ever in demand by the collector, for conveying such larvæ and pupæ as he may desire to rear, to the mature state.

A small but strong chisel will be found very serviceable in loosening the bark of old trees and digging into partially decayed stumps and logs, in which positions are often found very minute but

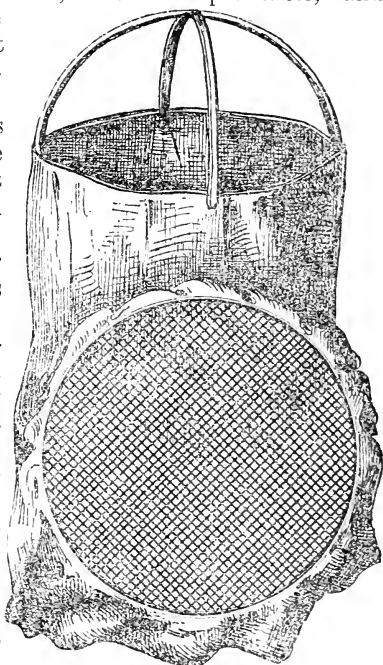


FIG. 3.

rare and desirable specimens. The skill of a collector may be gauged by the number of minute species in his collections. Untrained eyes will detect the

FIGURE 4.

macro insects, not so the micro. To pick up very small species, a pair of small steel forceps are necessary, Fig. 2, and quills with close-fitting wooden stopples, are good temporary receptacles for these Liliputs among insects. To kill such insects we have but to put the quills containing them into a cyanide bottle for a brief period.

At all seasons, and especially in autumn, many rare and beautiful insects, mostly bugs and beetles, crawl for protection and concealment, under leaves, chips and other fine rubbish. To preserve such specimens, the collector needs a cloth bag with a bottom made of wire cloth with one-quarter inch meshes. This sieve, which serves for the bottom of the bag, should have a strong wire for its circumference. The bag, Fig. 3, I use is about one foot deep, while the bottom is nearly one foot in diameter. To use this we have but to put in the leaves, etc., and then vigorously to shake the bag above a white cloth when the insects will fall through the sieve on the white surface, and can be easily seen and secured. If the white cloth is rubber, it will be well to have it large enough to kneel upon while shaking out the insects, which conserves the strength of the collector, and in damp places the health as well.



Fig. 5.

The collector will find a large umbrella a very essential auxiliary to his collecting outfit. It will form a grateful shade on hot days, and may be used with wondrous success in collecting beetles and caterpillars. Many larvæ mimic the leaves and branches on which they rest so perfectly, that unless shaken off they will escape even the most skilled observer. To use the umbrella we hold it open, but inverted beneath the tree or branch, then giving the latter a sharp jar, *a la* curculio-catching, when often we will find a catch which will incite our highest enthusiasm, so numerous, varied and interesting will be the shower of insects. Last, but very important, are the nets which the insect collector will bring to his aid. To make a net procure at a hardware store a piece of the largest-sized wire, Fig. 4, three feet long. Get the blacksmith to bend this, with the exception of four inches at each end, into a circular form. The ends must now be bent at right angles to the circle, Fig. 5, welded together and sharpened. A cane or broomstick, with a hole in one end to receive the sharpened end of the wire, Fig. 6, forms an efficient handle. We thus have a good frame-work for our net. If our net, Fig. 7,



Fig. 6.

is to be used in capturing moths and butterflies, the bag which is to be attached to the wire-circle may be made of mosquito netting, or better, of Swiss muslin, and, to secure more strength, a strip of strong factory should be bound about the netting where it encircles the wire ring, and be sewed on strongly with it. The bag may be two feet deep. For dredging, the bag should be shallow, not

more than eight inches deep, and made of strong fish netting, with the meshes of the twine about one quarter of an inch across, Fig. 8. A third net, made like the first one described, except that strong factory replaces the muslin for a bag, is very serviceable in whipping bushes and sweeping over weeds and grass, with which one may often do the most rapid and satisfactory collecting.

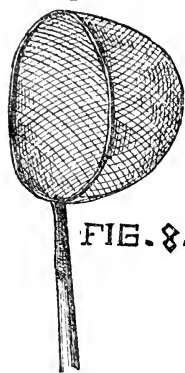


FIG. 8.

During the warm nights of June and July, and especially of August and September, no entomologist will neglect sugaring for insects. By this process he will secure some of the rarest gems of his cabinet. The method of sugaring is as follows: A liquid, consisting of two-thirds

of the cheapest New Orleans molasses, and one-third of stale beer, is placed, as night approaches, upon tree trunks, small boards fastened horizontally to the top of stakes, on fence rails, wood piles, etc. I have had the best success with the horizontal boards, placed among the thick foliage of grape vines. As twilight deepens, even to 10 or 11 o'clock, the exciting captures follow thickly one after the other. A dozen sugar traps will often keep a person fully occupied. To make the captures we cautiously approach a trap, lighted by a lantern either strapped to the body or held by an assistant. We next decide which moth we shall take, for often there will be a score sipping the sweet from a single board; then carefully place the mouth of an open cyanide bottle over the moth of your choice. If successful, the captured frightened moth rises in the bottle when we quickly apply the stopple, and exchange the bottle for a second one in our right coat pocket. With this we proceed to operate as before at another board, as the moths were probably all frightened away from the first board. This time we not only exchange bottles, but carefully empty the now quiet moth, first captured, into a third bottle, kept in the left pocket. We keep on till we make the entire circuit, when we repeat the round, and thus on so long as success attends our efforts.

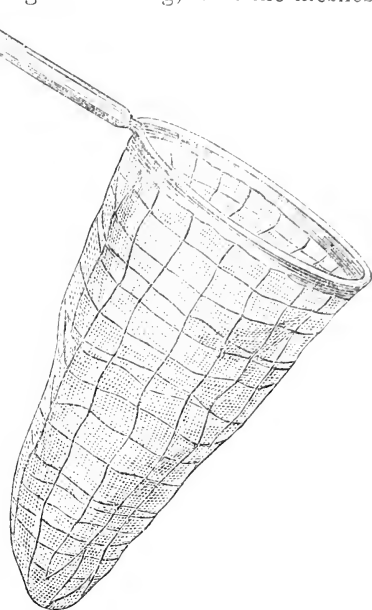
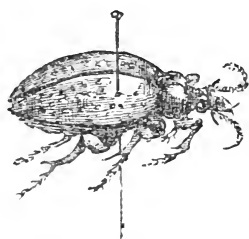


Fig. 7.

APPARATUS FOR PRESERVING OUR SPECIMENS.

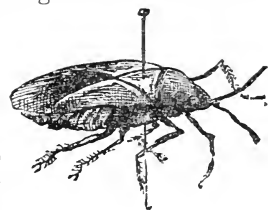
All insects, except those preserved in alcohol or other liquids, mostly for purposes of study, are kept in place in the cabinet by use of pins. That our collection may appear better, and that we may be able to exchange with other collectors, it is always desirable and best to secure special insect pins, and pin according to the uniform method generally adopted by entomologists all over the globe. These pins are longer and more slim than common pins, and cost from \$1.25 to \$1.50 per 1,000. All mature insects, except beetles and bugs,



BEETLE PINNED.—FIG. 9.

should be pinned centrally through the thorax, Fig. 11. Beetles are pinned through the right wing cover, a little back of the pro-thorax, Fig. 9, while most bugs are pinned through the scutellum, Fig. 10, the prominent triangular piece just at the base of the wings. The distance from the head of the pin to the insect should always be the same, about three-eighths of an inch.

Moths and butterflies, both for purposes of study and exhibition, require to have the wings spread. In spreading the wings it is desirable to secure the most perfect uniformity, which will be accomplished by drawing the primary or front wings forward, till the posterior margin is at right angles to the body of the insect, Fig. 11, after which the posterior or secondary wings are drawn around to the primaries. The wings are drawn around by the use of pins, which should be passed through the wings just back of the large main veins. With small, delicate moths, the greatest care is required that we may not tear the delicate organs or rub off any of the minute scales on the body or wings. Only perfect specimens are desired by the best entomologist. To spread insects, a spreading board is necessary. This, Fig. 11 d, d, each



BUG PINNED.—FIG. 10.

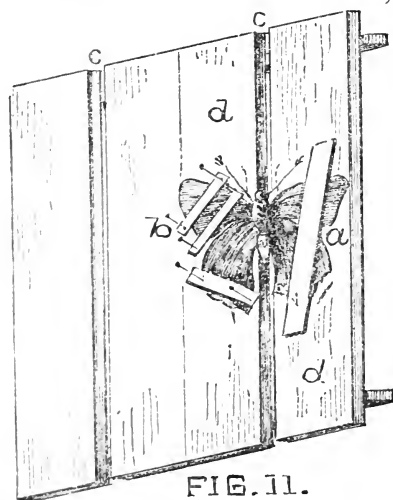


FIG. 11.

two feet long, two inches wide and one-half inch thick, which are held in the same plane, and parallel to each other by cross-pieces, and when nailed are from one-eighth to three-quarters of an inch apart, according to the size of the moth, as this space, Fig. 11, c, c, is to permit the body of the insect to pass through so that the wings shall come down to the plane of the upper surface of the boards. Beneath the open space, cork or corn-stalk pith, is fastened that it may receive the pin and help to hold the insect more securely. The spreading-board illustrated is one of seven drawers, belonging to the writer which rests in a neat walnut case, with wire-gauze door and back. This arrangement prevents injury from mice, etc., and from its ample ventilation, secures the rapid drying of the specimens.

The drawers, Fig. 11, are 10 by 12 inches. Below these drawers in the case is a common drawer for holding pins, forceps, etc. To hold the wings when spread, small rectangles of glass, Fig. 11, a, with edges ground off, are laid upon them. Some entomologists prefer thick card-board cut into small pieces. These pieces, Fig. 11, b, by pinning above the wings, will press the latter and hold them in place till they dry.

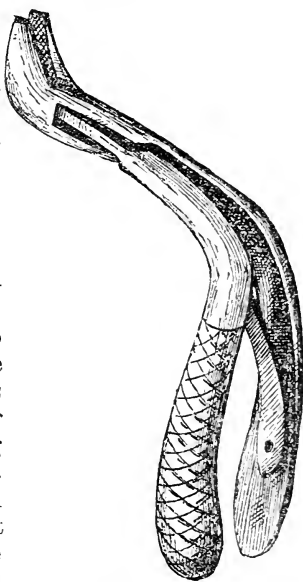
After pinning, insects may be kept in paste-board boxes, boxes made of soft wood, with close-fitting covers, or in drawers which may slide into a cabinet. In all cases the boxes should be close fitting

SPREADING BOARD.

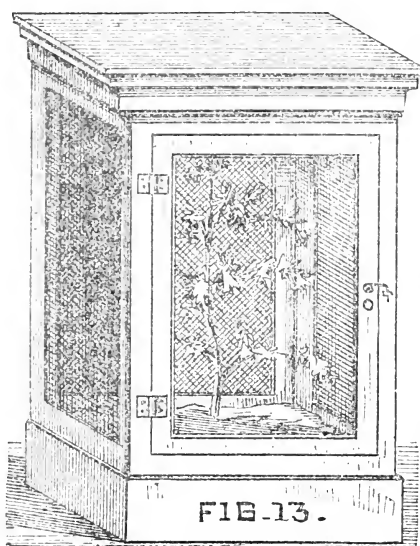
The bottom of the boxes should be lined with cork or corn pith, to receive and hold the pins. If the latter is used, it should be boiled in water for a time, that the pins may not corrode. The boxes will look better if the cork or pith is covered with clean white paper. Two sheets of heavy white paper, spread upon a frame just large enough to pass closely into the box, one held one-quarter inch, and the other one-half inch from the bottom of the box serve well to hold the insects, especially if the bottom of the box is of very soft wood, which will receive the points of the pins. In pinning insects, heavy forceps, either straight or bent, Fig. 12, are very desirable. Insects in boxes must be kept from the mice and carefully guarded from moths and other insects. These latter are the greatest pests of the cabinet, and can only be kept from doing serious mischief by the most active vigilance on the part of the entomologist. Rectified benzine will destroy these museum pests, and not harm the specimens. It is better to exercise so much caution that we shall be free from these ruthless destroyers. Very close boxes or cases, which are never to be left unclosed, and the placing of all new insects in quarantine boxes before putting them into the cabinet, are among the safeguards.

Larval insects may be kept in alcohol, or, to better preserve their color, in benzine. If it is desired to pin the larvæ in the cabinet, we may prepare them for it by enlarging the anal opening and carefully pressing out through this the entire viscera. We may distend the body properly by blowing in air through a straw, and while still blowing, bake the body in a small tin oven well heated with a lamp. With the proper care the specimens may often be saved by this method, so as to represent the living appearance almost perfectly.

The enterprising collector will not be satisfied to collect and preserve and go no further, but will desire to watch the marvelous changes presented by insects during their development, and so will desire to rear insects, and for this purpose will need a breeding cage. Here he will collect the various parasitic species. A glass can, covered with wire cloth, will answer for a cheap breeding cage. A box, one foot each way, with one side glass and one side fine wire cloth, will be better. Or he may have a neat walnut case, Fig. 13, with a glass door, and gauze back and ends. The writer's case consists of several such apartments, separated by wire gauze partitions. Earth in the bottom of a breeding apartment will serve to hold the food plants, and will offer the insects an opportunity, if they pupate beneath the ground. Larvæ that feed on leaves ought to be fed often with fresh food, which is all the more acceptable to the insects if it is dipped



PINNING FORCEPS.—FIG. 12.



INSECT BREEDING CASE.

class in the Michigan Agricultural College, for the above drawings.

RESOLUTIONS CONCERNING SCHOOL GROUNDS.

Prof. Whitney, who was chosen a committee to present some method of carrying out the suggestions contained in Mr. Latta's paper, reported the following which was unanimously adopted:

Resolved, That it is within the province of this Society to encourage the decoration of country school grounds, and we should do so by offering premiums to enlist the attention of the people and thus secure a great improvement in the places where our children spend so much time.

Resolved, That in the opinion of our Society, local societies should give more attention to this matter and use prizes and various other means to improve public grounds, school yards and roadsides.

The Society took a short recess until evening.

Wednesday Evening Session.

The first paper of the evening was from the pen of Mr. George Parmelee, who regretted that his state of health would not admit of his being present. The paper was his report as delegate to the Illinois and Indiana conventions of horticulturists.

HORTICULTURE IN OUR SISTER STATES.

Mr. President, and Members of the State Pomological Society:

In accordance with the wish of our society, I had the pleasure of attending the annual meetings of both the Illinois and Indiana State Horticultural Societies in December last.

The meeting of the Illinois society was held in the State capitol at Spring-

in water before it is placed in the cage. A small bottle sunk into the earth at the bottom of the cage will hold the plants upright, and if kept filled with fresh water will keep the plants more fresh.

Insects may be sent by mail at a very light expense. They may be pinned to a cork at the bottom of a light wooden box—paste board boxes are apt to be crushed in the mails—or wrapped carefully in cotton batting. Larval insects should be inclosed, together with some fresh food, in a perfectly tight box. They need no air, and in close boxes the food will keep more fresh.

I close this paper with the hope that some may be led, by its production, to study those pages of nature which ever serve to interest and give valuable instruction to him who is so happy as to be led to their perusal. The writer is indebted to Mr. S. Upton, of the junior

field. As the law-makers were not in session, one of the legislative halls was used for business meetings, while the exhibition of fruit and plants was on the main floor in a beautiful and commodious room, devoted to the interests of agriculture. This was adjoining and connected with the well furnished office of the Secretary of the State Board of Agriculture. The size, style, and accessibility of these rooms and the adaptability shown in furnishing them was decided evidence that the State officers are not disposed to ignore the importance of their leading industry. Their juxtaposition with the State Treasury rooms (on opposite sides of main hall), seems to be significant of their relation to the wealth of the State, representing it in the abstract, and in the concrete. The room for exhibition, styled "Agricultural Museum," is seventy feet long by forty-four wide, lighted by four large main windows, besides hall lights and head lights over hall doors. For evening it is provided with four large twelve-burner chandeliers, giving forty-eight jets, and it is warmed by four steam heaters, distributed to give an even temperature. Across one entire end of this room—or forty-four feet in length, was a set of glass front shelving extending up nine or ten feet from the floor. The lower part, up to ordinary counter height, opens by hinges, and the upper part by sliding doors. There were, also, six wide, double counters twelve feet long with show cases on the top facing opposite ways. The under works of these counters was sash and glass with doors opening by hinges. Three of these counters have their show cases surmounted by six feet high glass front, double shelving, also facing both ways with sliding doors.

In addition there was on the wall which separated this room from the great hall, a large glass front case arranged especially for entomological specimens, and well filled with Illinois insects. There were, also, creditable private collections put in by students of the Industrial University. Temporary tables were in good supply for greenhouse plants and fruits. The Legislative hall, in which the business sessions were held, was a miserable failure, as many public rooms are. But it was highly ornate and said to all strangers "Illinois is a great State." And we cheerfully admitted that it was.

The attendance of practical gardeners, and fruit-growers was said to be less than usual, and complaint was made that some of the railroads had grown less liberal on rates of fare to these meetings. The Illinois Central, a land grant road, I understand, has always granted all the courtesies, on such occasions, that could be reasonably expected. The time was industriously used; there were three sessions a day of fully three hours each. The sessions were usually opened by a paper or papers followed by short discussions; and the discussions were held well to the subject of the papers. Of these papers the professors in the Industrial University contributed a liberal share.

Prof. Burrill showed samples of many kinds of wood, one a species of cat-alpa from an old log supposed to have been on the ground one hundred years, for which he claimed great durability, sufficient hardness, and rapid growth, and that it might be grown on some lands very profitably. The subject of timber excited considerable interest. Mr. Periam, of the Prairie Farmer, claimed that tree production in that State was increasing, that little timber land was being cleared, and that orchard trees, ornamental trees, and green fences more than compensated the destruction of forest as far as effect on climate is concerned, and this statement seemed to be acquiesced in. The President stated that the open, wild prairie land now sells higher per acre than land covered with timber; yet the necessity of growing trees for building and

mechanical uses seemed to be impressed upon the society, and that wet lands should be mostly used for that purpose.

Prof. J. B. Turner, of Jacksonville, gave statements of facts about ornamental tree planting on lots designed for building purposes which, in a few years, without other improvements, greatly advanced the selling price of the lots; showing a large return for the cost. The native hemlock has many friends as the most beautiful evergreen, and was said to bear cutting well.

Mr. Spaulding of Springfield, testified to the injurious effect of coal smoke on evergreens and his statements were verified by others present. The city burns a large amount of bituminous coal, and the general appearance of the evergreens there prepared one to believe such evidences. On farms and in the small villages they seemed as bright and thrifty as one could wish; and I may here say, that the endless succession of naked or treeless houses, which a few years ago were seen on the great prairies, is not now to be found. Judicious tree planting has done for them what nature has done for so many Michigan farmers,—furnished beautiful shade trees already growing, and it would not be the strangest thing that ever happened if, in thirty years more, those Illinois farmers were more generally enjoying the comfort and beauty of tasteful groves about their dwellings than are those in Michigan. They have now many homes with beautiful surroundings not excelled in our state.

They do for themselves what nature neglected, and that has done much to destroy the monotony of prairie views.

Much of their discussion of practical horticulture has less interest for us, owing to differences of climate and soil, and I will endeavor to report only those ideas which may be useful to some of our own cultivators. The committee on orchard culture recommended that heavy prairie soil designed to be planted to fruit trees be first plowed into high ridges, and the trees set on the center of the ridges, the after culture to preserve that form of the ground. Prof. Tice, of St. Louis, in his lecture on Meteorology, suggested that electric conditions of the atmosphere may be found to cause some of the forms of blight of fruit trees which are as yet unexplained—such as apple and pear tree blight, and that it might be the predisposing cause of peach yellows. The yellows was thought by many a very unpromising subject to investigate, and I could not get information in advance of what our own men know of it.

I could not learn that any facts have been collected or put on record, of its appearance and attendant conditions. The remark was made by one member, "There is only one point about which we are sure and that is,—that we do not know anything about it." The merits of varieties of strawberries drew out considerable discussion, but the Wilson held its supremacy there, though Capt. Jack, Kentucky, and a few others were praised for some good qualities. In cultivating for market, massing in rows with cultivation between, and planting every two years, found most favor.

One evening was given to entomology, and the subject was made interesting by Miss Smith, of Peoria, and Prof. Thomas, but I took no notes, thinking I could refresh my memory from reports in Springfield newspapers, but failed to get a report. Prof. Forbes made a brief report on ornithology. A considerable collection of many kinds of birds' stomachs had been made, for which, I understand, the state appropriated a small sum. A portion only had been analyzed, and the report was not completed; it will, doubtless, appear in the secretary's annual report.

Prof. Burrill made an interesting report of some of his investigations of

curled peach leaf, pear leaf blister and black rust of various verbenas. The curled leaf, he thought, caused by a parasitic fungus which is traceable in the naked twig in the autumn before its appearance. The blister of the pear, he claimed, is a gall made by a mite one two-hundredths of an inch long, resembling much the inch mite.

The exhibition of fruits was quite good, and very interesting to me, because of the presence of sorts not cultivated in this state, and I hoped to find something of southern or western origin that might be of use to us. Their best varieties of apples are all grown, more or less, here, and of the few sorts not grown with us I saw nothing desirable to import.

The Ben. Davis for market purposes has more friends than any other sort. Those of that sort on exhibition were of large size, fair and bright. Many of our standard apples I did not see in their collection.

On the week following the Illinois meeting, the Indiana State Society held their meeting at Danville.

Apples are quite extensively raised in that section of the state, and the show of that fruit was large and of good appearance. Ex-Governor Furness, of Nebraska, was present with some apples from his state very showy and large. Having just seen an exhibition of Michigan apples, the state of ripeness at both these places was a noticeable feature. I looked this collection over, also, with the same purpose to find something useful to us, but saw nothing new that was promising. It was a very full display, and numbered more sorts than at Springfield. The meeting was held in the court-house, and was well attended; those from abroad were entertained by the citizens. Here, as at Springfield, strawberry culture was thoroughly discussed, and the same preference was given to the Wilson, and to the massing in rows for market production. The Capt. Jack was also highly spoken of.

Mr. Ohmer, of the Ohio Horticultural Society, also gave his experience in favor of massing in rows with culture between, and planting once in two years. Of other small fruits or of pears, peaches, plums or grapes, very little was said at either meeting, but at Danville, practical fruit men urged the giving of more attention to packing and putting on the market in good condition.

In many things both of these meetings were like our own gatherings, and if all who, in either state, give the attention to horticulture in any of its branches, either for profit or for the love of it, would take advantage of the opportunities to attend these meetings, they would gain something to add to their enjoyment and to their stock of knowledge.

EARLY BEARING VARIETIES.

Following the paper of Mr. Parmelee a question was presented by Mr. Thompson inquiring what other varieties of apple trees came into early bearing like the Wagener.

There were several answers given, all agreeing that the Wagener for this peculiarity was at the head of the list. However the Keswick Codlin, Maiden's Blush, Early Harvest, Duchess of Oldenburg and Jonathan were mentioned among those which generally come into bearing quite young.

Mr. Pearsall inquired as follows: "I want to graft a couple of trees to early fruit for family use. What cions shall I insert?"

Several answers were given—naming Keswick Codlin, Early Harvest, Sweet Bough and Primate.

THE ONE BEST APPLE.

President Lyon inquired for opinions upon the query: If all the apples were stricken from the list save one what one would we choose to save for Michigan?

Mr. Bitely.—From my present experience in the market and the home—for dessert, cooking and all uses, considering the tree as well as the fruit, I should take the Baldwin.

Mr. Selover.—The Baldwin has many points of merit, but I would want a hardier tree and a fruit of better quality, hence would save the Northern Spy.

Judge Lawton.—I would agree with the gentleman in his choice.

Mr. Harrison, Kalamazoo.—I should choose the Wagener, because the tree is smaller and bears earlier in addition to the good qualities of the Spy.

Messrs. Williams, Dorr and Pearsall chose the Baldwin as their favorite.

Mr. Avery, Grand Traverse.—The Wagener will suit more tastes than either of the others mentioned. The Baldwins are in poorer condition, as to health of tree, than almost any other variety in the state.

Mr. Merriman said he was glad the opinion of any man was not final in this matter,—even his own—still his choice would be the Wagener.

Mr. Chilson thought he should choose his location and save the old Rhode Island Greening.

Prof. Tracy upon being urged to give his opinion said—I can not answer—unless the conditions of existence, the wants, the uses of the fruit are also defined. My choice would vary materially with localities and various other circumstances. It is impossible to speak my mind without circumscribing my condition of life.

Mr. Lyon.—One reason in asking the question is to get at the best variety. We aim at this in our arrangement of classes in the premium list. It is desirable to bring out opinions as to first, second, third, and fourth best, which are based upon actual experience. I could not choose the Wagener because of the peculiar tendency to overbear, nor the Baldwin because it lacks hardiness. I rather favor the Northern Spy.

THE KNIFE AND THE YELLOWS.

Judge Lawton asked what precaution should be taken in pruning peach trees so as not to disseminate the yellows.

Prof. Beal thought this a very important matter, inasmuch as a tree might have the yellows enough to impart the disease and still not exhibit any signs of it distinguishable to the eye. He thought an alcohol lamp could be taken along by the pruner, and the blade of the implement be passed through the flame after finishing each tree.

Mr. Tracy said he had used crude carbolic acid for similar purposes with good effect. The liquid could be purchased very cheaply, and a can or pail of it could be carried about the orchard in case of pruning, and between trees the implement could be dipped in the acid.

Mr. Bitely.—Would there be any doubt about this material being effectual in killing any germs of the disease that might adhere to the knife?

Prof. Beal.—I think none at all; and this would be a better choice than the lamp.

Mr. Tracy.—I employed the liquid in a single case of pear blight that was found in my orchard. I cut the diseased limb below the blighted part, and

then applied the carbolic acid. I think perhaps it may have had the effect of saving a further dissemination of the disease in the tree. One thing is certain, the odor of that acid was discernable a year afterward, exhibiting the fact that it is not quickly lost.

A question.—Do you consider carbolic acid a remedy for pear-blight?

Mr. Tracy.—No; I have no such idea; I have no theory in the matter. The fact is, I used it in this case and the blight did not reappear; it might not have reappeared any way. Still, if I had another case I should try a similar expedient.

The question-box having been emptied, Mr. Guild offered the following:

Resolved, That Mr. Jesse F. Romer be appointed our Vice President for Bay county.

Adopted.

The last topic of the evening was:

CAN TOWNSHIP AND DISTRICT FRUIT SHOWS BE MADE PROFITABLE?

Secretary Garfield said: This topic is worthy our serious consideration. The same arguments that would establish farmers' clubs, granges, and the like, apply directly to the exhibition of products for purposes of comparison and instruction. A great many questions that are now asked at our quarterly meetings would be considered silly by the parties asking them if several times in the year they could, in their own locality, attend a show of fruits that are raised in the vicinity. I find, too, that when discussions are accompanied by samples, they are better flavored and conduce to better results. The same reason that would lead Prof. Beal to place before his beginners in botany specimens instead of books, is applicable to our own study of pomology. Descriptions and methods are prosy things, when taken in the lump, without any spice of illustration. We want the fruit itself to accompany the description, and the fruit to illustrate the effect of a method of practice. Again, I have noticed that there are lots of people, who are full of ideas, who say nothing until you place an apple, an ear of corn, or a bunch of twigs in their hands. The specimens bring out the experience, the facts that help in our future work. A neighborhood fruit show is a very simple thing to handle. Let some leading spirit start the matter, and it requires but little agitation to secure more than any one could expect.

A township exhibition of fruits is a larger thing to handle, and my own thought would be to have prizes for the best samples in the prominent varieties. These prizes need not be money, but home-made or home-grown articles, offered by individuals. It would be well to unite the fruit show with an exhibit of some other things; for instance, some lady genius could offer a nice piece of fancy work or a home-made picture for the best peck of Baldwin apples, and in turn the man who has plenty of Baldwins could offer a barrel of them for the best display of fancy work. You will see this plan is capable of being indefinitely dilated. Let the day be used, most of it, for informal conversation and comparison of articles; the latter part of the day for discussions set in a programme which will bring out the facts learned at the show. I am satisfied this plan is practicable and prolific of good results, if only taken hold of in the proper spirit.

Prof. Beal.—I heartily endorse the views of our secretary, and will, with the permission of the president, give a little of our experience in this direction

in Capitol grange, located in this city. Our first attempt in the way of an exhibition was with corn. We were all surprised at the variety of the display, and it was a foundation for the relation of valuable experience and the stimulus to a most satisfactory discussion. We could not get through with it in one evening and continued it over to another meeting, leaving the samples on exhibition in the mean time. This was followed by an exhibition of apples, which was also a success. I am satisfied that this plan involves a correct principle upon which to base a system of instruction. I work upon this plan in teaching botany to classes. I begin by having them gather a certain kind of specimens, requiring them to observe all they can: and scarcely a year goes by but that some important fact is brought out that old observers have rarely noticed. The exhibition of specimens always suggests valuable information, and I favor this idea for clubs and societies organized for purposes of instruction.

Mr. Pearsall.—I am satisfied, too, that great benefit may be derived by holding these shows and bringing the people together, old and young, to talk over any matters suggested by the specimens shown. Many people can give their experience with an apple in hand or a plate of fruit to handle over, who could say nothing at all empty handed. Very many of us are like the boy in the spelling class who missed the word because the button was off his coat that he usually had hold of. One or two of these district fruit shows I have attended with very much profit, and I can see that by proper management they can be very beneficial.

Mr. Guild.—In our farmers' club of the Saginaw valley we find that the fruit exhibitions are of inestimable value in illustrating information that would be of little value without the specimens.

Judge Lawton.—I am of the opinion that rightly managed these local exhibitions of fruit might be made a fertile source of amusement and instruction. You know at Paw Paw our people carried fruit together and thought they selected well. They did not know the value of a stem or a blow in a specimen, and did not consider the importance of some of these points in judging of the value of a specimen. They received rather harsh treatment at the hands of the committee, but it was good for them. They learned a valuable lesson. At any exhibition of this sort the people go away with new ideas that are of worth in their experience.

W. H. Harrison.—I believe in these fruit shows, and also in the formation of local horticultural societies. They pave the way for such meetings as these, and furnish the questions, the discussion of which will be most valuable at these general meetings.

Adjourned until Thursday morning.

Thursday Morning Session.

The first discussion of the morning was led by Charles N. Merriman upon the topic,

MISTAKES IN SELECTING ORCHARD SITES.

Mr. Merriman said: For the orchard location, few if any arbitrary rules can be laid down, applicable alike to all places. The most desirable exposure for the western would not prove to be the most favorable one in the eastern part of this State, and so of the northern and southern sections. Yet, certain gen-

eral principles will apply everywhere, at least in Michigan, and other northern States,—such as importance of altitude, good soils, land and air drainage, and the avoidance of low, wet, cold, or peaty lands.

Where to set the orchard and other fruits is for each planter a problem to be decided for himself, in accordance with the possibilities of his own situation. Of what practical consequence is it to him what would be the very best location imaginable, if he only had it, when, unfortunately he has it not? Yet, he still should know what kind of a location is best of all, even though he has nothing like it in his little home domain, as an aid toward approximating toward it so far as he may.

Of one of the common mistakes in orchard planting, I saw an example last week, on the shore of Lake Michigan. This orchard was safely nestled under the lee of high wooded bluffs on its west and northwest, and was also hemmed in on the south and east. Thus no rude blast had ever invaded its sheltered home. "Protection," had been the object sought and gained! Yes, gained with a vengeance! For mark the result: although the soil was rich the shelter perfect, and the trees vigorous, yet for a score of years they have stood entirely profitless and unproductive in this sheltered nook; while the owner had hundreds of acres atop of the terrace, stretching back in a grand plateau to the shore of Lake Michigan, a high table land terminating at the top of the precipitous lake bank, with no sand hills or bluffs to break the free play of the lake winds, unsheltered by tree or shrub. A site like the one last described is perhaps the very best possible for our west shore of the State; and as to exposure, in locations similar to this one, a western would be preferable to any other; although if level and high it is all right here or anywhere along the east shore of Lake Michigan, yet some believe the protection afforded by the tree clad and vine tangled bluffs and sand hills to be beneficial. But the interruption of atmospheric drainage, the usual lowness of the situation, lying under those bluffs, the frequent thawing and freezing in the sudden alternations of heat and cold, probably more than counterbalance the benefits.

In a large portion of our State, the cold storms and protracted, blighting winds of May or June—sometimes, though very rarely encountered—are from the east and northeast, favoring a western exposure. In other sections this danger, if it come at all, is from another direction, requiring a different exposure. It remains for each locality to learn the quarter from which it would come there, if at all, and choose the slope or exposure of best protection from it. The winds, however, are so much oftener a help than a hurt to fruit-growing that we must court their aid. Therefore, we find the invariable rule for all Michigan is that in favor of altitude. First, last, and all the time, height! This rule is a very easy one to follow in deciding your choice; even if you have no very high land take the highest and best you have, and there set your fruit trees and vines, and rest assured of having chosen wisely and well, for all soils except drifting sands, which none would plant. Yet it is not enough that the location is high, but the surrounding lands must not be higher still, with their crests and crowning forests overlooking it, and breaking its circulating air currents.

In our hilly regions farmers have a habit of leaving a border of half chopped woodland belts along the swales and low openings where streams emerge from valleys, perhaps by very narrow gorges which furnish the only possible channels for atmospheric drainage. These should by no means be left choked by either forest, fruit trees, or any other obstruction, and even the protection of orchard locations by the hedge and timber belts as ordinarily done, and as

recommended in other states, we regard as a great mistake here, an egregious blunder. Michigan orchards, it is believed, require nothing of the sort, but do need the free sweep of the winds, which would be thereby obstructed, to the detriment of fruit crops, and trees also, in their hardiness and ability to withstand all vicissitudes of climate here. Low evergreen hedges, not to exceed say four feet in height would be allowable, and in many locations very beneficial, running through the orchard at intervals, for catching and holding the snows for a further winter protection, but kept low enough to obstruct the wind as little as may be.

Neither let the orchard location be crowded aside into some obscure or "spare lot" of little value, but choose the most valuable field and commanding eminence of the whole farm, 'round which there shall ever cluster the fondest memories, carrying old age back to happy childhood,—holding green and fresh the many endearing old associations inseparable from the spot where our young feet used to scamper for the reddest, the yellowest, the mellowest,—recollections that fade not while life lasts.

Among the mistakes in orchard planting we would refer to that of setting each kind of fruit in a location by itself. I would advocate the planting of different sorts interchangeably in the same rows, using the same location; for example, for the peach and the pear orchard first a peach, then a pear tree. It is not good for pears to be alone, but they need proper companionship. Pair them off as they do in congress,—if the whole lot were paired then there would be no battles to be fought, the business would be easily done. I saw a big peach orchard, and right alongside it a pear orchard located of 1,000 trees planted all by themselves, and not a pear tree left now worth a row of pins except the last tree of each row near the peaches; they were planted some 14 years ago.

Why do our orchards so soon exhaust their soils, and become old and dilapidated before their time? Why do we find it so difficult to keep up a supply of the requisite elements for full and continuous crops? Chiefly because the kinds are massed by themselves, and are thereby rendered powerless to afford aid or relief to each other. I must not take your time, or digress so far from the limits of our topic as to attempt a solution of the chemical mysteries of plant and tree growth; how the peach and the pear, for instance, act upon, set free, extract, and magically conjurize among the same soils and elements, the one so as to produce in quantity, prussic acid and delicious peaches, and the other the saccharine exquisiteness of the sugary, melting pear, and the substance of its gritty core and skin, instead of the peach bloom and pit. Yet these wonders they do accomplish, and that without stint or limit; but in order to do so to the greatest extent and fullest effect they require to stand in juxtaposition, and when so placed their relation becomes that of mutual helpers each to the other. This let us call our pearing system, as it pairs our locations for orcharding. Now it only remains to pair wisely, and hit upon the true and correct pairing of all our fruits each with its proper mate or mates; and this requires a term of systematic trial and experiment. The liberty I crave in suggesting this line of experiment is for the purpose of helping us in finding out how far we may be benefited in thus locating our orchards of different fruits together. We admit that this has never yet been fully or satisfactorily demonstrated, but per contra, it is fully shown that ninety per cent. of all the pear orchards tested for the last dozen or twenty years have proved failures, practically from the tree blight. Yet it is only recently that it has occurred to any mind, perhaps, that any hope of relief from the pear tree

blight is to be looked for simply by locating the pear and the peach orchard together.

Mr. Thompson.—A lady wrote me of a mistake which cost her family \$6,000. It was an error in selecting soil for an orchard site. There are hundreds of such instances in this state where men have sunk money because of false ideas upon the matter of location. I think the elevated counties will prove to be the best for fruit. Washtenaw is a good example. Ionia county has a number of prominent contrasts between the low land and high land orchard sites. Grand Rapids handled over \$16,000 worth of peaches last year, all from the elevated lands.

Mr. Merriman spoke of contrasts in Washtenaw county, that had come under his own observation illustrative of the same law.

Mr. Dorr confirmed this statement with illustrations in his own experience in Washtenaw county. He said: Judge Lawrence planted 1,000 trees on a clay bluff of the Huron and three crops netted him \$1,000. This gave an impetus to the planting of peach orchards, until now there are about 250 acres of these orchards close to Ann Arbor. My own place is high—so high that my well is 104 feet to the water. I get peaches six years out of seven.

Mr. Potter thought water drainage as important as air drainage, and if the water were all taken out of some of our flat lands they might prove to be pretty well adapted to orcharding.

Mr. Lyon said there was a limit in the matter of elevation above which peaches could not be profitably planted in this state. He had seen such examples.

Mr. LeValley said that he planted the first peach tree in Ionia county 38 years ago. His first orchard was well protected by timber on the west and north; but that one bit of experience was sufficient for a life time. Since then he had planted other orchards, and the one that went through the hard winter the best when the thermometer went 10° below zero, then 20°, then 28°, then 38° below zero, was thoroughly exposed on the north and west. His choice of a location would be one on high ground with a deep and sharp slope on the north and west sides. Then he would plant evergreens among his orchard trees.

Mr. Selover spoke of a protective wind break on the west of his orchard, which he valued because it saved his apples from blowing off when his neighbors would have but few left on their trees.

Mr. Guild spoke of a new plan adopted quite successfully in the Saginaw valley of draining the surplus water into wells.

REPORT OF COMMITTEE ON VEGETABLE GARDEN.

The committee to whom was referred the recommendations in Mr. Davenport's essay on farm gardens and who were instructed to report a list of vegetables for farmers to grow signified their readiness to report.

In submitting the report of the committee, the chairman spoke of the

IMPORTANCE OF HORTICULTURE.

To strengthen the Society we should embrace garden culture. The importance of this is nearly equal to fruit culture. The two go hand in hand, and it is impossible to divide them. Small fruits coalesce with kitchen and even ornamental gardening. The committee beg leave to remind the Society that a farmer is not a vegetable gardener. He cannot go into the general cultivation

of vegetables for sale. He may raise potatoes for the market, perhaps, but this is about all. He had better feed all other surplus of the kind to his stock. He can raise vegetables sufficient for his table for a succession throughout the year. This he can afford for profit and health. The principal standard vegetables upon a farmer's table are, potatoes for nearly each meal, then cabbages, onions, squash, tomatoes, turnips, and corn. Most of farmers grow peas, parsnips, rhubarb, beets, beans, cucumbers, melons, radishes, and lettuce. It is not true that farmers have no gardens, for these vegetables are found upon the tables of the farmers generally in their season. Fresh vegetables, as grown by the market gardeners, are the delight of city life. The city vegetable market is the resort of all good housekeepers.

SUGGESTIONS.

We recommend that asparagus be introduced more extensively into farm living. It is a healthy, luscious dish when well cooked. As has been stated, a well planted asparagus bed will last a lifetime. We also recommend that celery become a plant of general growth and that it more frequently grace the farmer's table. Cauliflower is a vegetable of the cabbage kind that makes a delicious and easily cooked dish. Horse radish is a common relish on almost every farmer's table. The vegetable oyster, or salsify, is an early plant to grow and a nice dish, and every farmer can easily grow it. The following is a list of vegetables which we recommend for a farmer's garden. It must be recollected that varieties may not succeed in all localities. Different soils and exposure require different varieties. Farmers are recommended to exchange garden seeds and to select the best seeds. The list recommended is the result of experiments made for several years by Prof. Beal at the Agricultural College and by others.

THE LIST RECOMMENDED.

Asparagus—Conover's Colossal, color, deep green and crown close. It is a large variety, grows vigorously and sends up sprouts from one to two inches in diameter, where the soil is rich.

Beans.—Wax or Butter, a tender and rich variety, of buttery flavor, and as early as any. It is good as a snap bean for early cooking, or as a shell bean for winter use. The White Marrow, a large white bean, round and oval, very productive, tender and rich, and one of the best beans grown.

Beets—Early Blood Turnip, good early and late; blood red, turnip-shape, standard early sort.

Cabbage—Early Winnigstadt, considered by very many the best in cultivation for general use. Early and late, heads hard and solid, full and of good quality, and conical. Keeps well in all weather. Premium Flat Dutch, a superior late variety, a sure header, considered by some superior to any other late cabbage.

Carrots—Early Half-Long Scarlet, Stump-Rooted, is of a medium size; flesh is brittle, of fine flavor and bright scarlet. Popular for early market.

Cauliflower—Erfurt Dwarf—one of the best for general cultivation; heads close, large, solid, measuring from seven to ten inches in diameter. This is classed among the most delicious of vegetables.

Celery—Sandringham Dwarf White, said to have originated in the garden of the Prince of Wales; crisp, solid, not coarse but large, and a good table sort.

Corn—Early Minnesota Sweet, or Sugar; ears pointed and rather small, and though it matures early, has good qualities. Moore's Early Con-

cord Sweet, of first-rate quality, large ears, and is intermediate between early and late. Stowell's Evergreen Sweet is suitable for boiling and will keep the table in this delicious food until late in the fall; productive, tender and sugary.

Cucumber—Early Frame, makes a beautiful pickle and keeps well. Early White Spine, good for table use, straight, smooth, tender and excellent flavored. Improved Long Green is highly esteemed and considered by some as the best variety in cultivation for table or pickling.

Lettuce—Early Tennis Ball, grown extensively by market gardeners, in cold frames, for early spring marketing; small, hardy and the head blanches tender and white. Malta Drumhead, a fine summer variety.

Melon—Nutmeg, a rich, sweet, melting variety of the muskmelon sort. Black Spanish, a round, dark green watermelon, of rich, sugary flavor. Mountain Sweet, a large, long, oval sort of a watermelon, with solid flesh to the center and very sweet and delicious.

Onion—Wethersfield Red, Large Yellow, and White Globe, familiar sorts with which all are acquainted.

Peas—Laxton's Alpha, and Champion of England.

Parsnips—Hollow Crown, grows mostly below the surface; has a smooth, clear skin.

Radish—Early Long Scarlet Short Top, the best variety for table and market use. It is six or seven inches long, half out of ground, quick to grow, crisp and brittle, bright scarlet, straight and smooth.

Rhubarb—Victoria, a large heavy variety, a well grown stock will weigh about two pounds; red at the base. The Linnaeus is worthy of cultivation, it is early, high flavored, crisp, and is a good sort for family use.

Salsify—The vegetable oyster is hardy and may remain out all winter. Recommend the common sort; wholesome and nutritious.

Squash—Early bush, Crookneck, Marble-head and Hubbard. The last is the best winter squash known, dry, sweet and rich-flavored.

Spinach—Round Summer, the best variety for a delicious dish of "greens."

Tomatoes—Early Conqueror, an early variety of great prolificness, smooth, handsome, well formed. Trophy, solid to the center, heavy, smooth and well formed. Mr. Waring, its originator, is entitled to the thanks of the tomato-loving public for this variety, which has stood the test without failure.

Turnips—Strap Leaved White Top, an early, sweet, tender table sort. Rutabagas,—Skirving's Liverpool.

Potatoes—Extra Early Vermont, Early Rose, Alpha.

Unless gardens are near a market the committee recommend the raising of only a few kinds of vegetables. This subject was recently discussed by the Massachusetts Worcester Horticultural Society, and it was there said that it is better to cultivate but a few kinds and to devote to them special attention and culture. John B. Moore said he was 16 miles from market, and raised but few crops; he had a strong hold on onions, and described his management, which briefly, is to put the rows 14 inches apart, to kill the weeds before they come up, to select lands entirely free from stones, and to raise his own seed. He found wood ashes valuable; he had obtained 800 bushels to the acre. Another leading crop with him is asparagus, which usually paid him \$300 to \$500 per acre. The crop requires a sandy soil and high manure. He said the salt theory is a myth, and that salt is of no value to the plant. A heavy dressing renders the crop later. He sets his plants eight inches under ground and plows over them. After this every inch deeper makes the crop a week later; he

plants in rows three feet apart and fifteen inches to the row; a greater distance would doubtless give larger plants. He grows 10,000 cauliflowers each year, manures heavily, adding 100 pounds of muriate of potash to the acre; procures all his seed from Italy, and is sure there is no good seed raised here.

Your committee heartily endorses the sentiments of Mr. Davenport's excellent paper.

J. P. THOMPSON,
W. J. BEAL,
E. F. GUILD.

Following this report, the secretary announced the last topic for discussion as:

LEGISLATION FOR FRUIT INTERESTS.

What can be done by legislation to aid in the development of Michigan fruit growing?

J. P. Thompson of Detroit was called upon to open the discussion, and remarked substantially as follows: I had not expected to speak upon this question. Thus far Michigan fruit-growers, and especially this society, have received very little at the hands of legislation. The society was incorporated, its reports published, and at its recommendation a law passed of local effect concerning the yellows. This covers about the whole ground. I do not believe in asking for money at the hands of the state. The society has gone through so far admirably without any aid of this kind, and the people who are especially interested in its welfare, who are reaping the benefits of its work, will continue to support the enterprise. There is some talk of increasing the number of the reports published. I even doubt the expediency of this. We do not want to issue a volume for every man in the state, but simply for those who will use them properly. They are books of reference of a high character, and for that purpose it seems to me we have about enough.

Mr. Lyon.—I somewhat doubt the wisdom of asking for more volumes unless means are given us to aid in their distribution. A large increase in their number with no such provision would bankrupt the society.

Mr. Saunders, Detroit.—The fruit interests already receive indirect appropriations from those given to the Agricultural College, and my own conviction is that this is the very best way of getting the benefit of legislative appropriation.

Prof. Beal spoke of the building that they proposed erecting at the college the coming year, if the legislature sanction it, for the purpose of storing a horticultural and botanical museum.

Secretary R. G. Baird.—The work of this society is largely a labor of love. From the beginning its members have been accomplishing a great deal for Michigan fruit-growing, because of their interest in the work. They enjoy seeing the peculiarities of Michigan climate and soil made the most of for horticulture, and are repaid for work done in the results of its accomplishment. The work done by this society and the Agricultural college for the centennial exhibition are examples in relief, of this kind of labor. I am in favor of an addition to the number of reports published. They are doing a good deal of good, and there are large numbers of our state's people who want them and would be benefited by them, who can not now be supplied. As regards statistical matters there is certainly a lack of information that would be of great value, and my thought concerning it is that this society select a

committee to confer with members of congress from this state and urge that in the taking of the United States census, horticulture be given its proper attention.

Mr. Lyon.—There has never been provisions in the census blanks for adequate account of the value of orcharding or orchard products, and it would seem that in this State, where pomology is made so much of, we ought to have annual statistics of these products.

Mr. Partridge.—I understand there is a bill now pending before the House for the gathering of cereal and fruit statistics, and already there has developed a good deal of opposition to it, and I am led to believe there is danger that the fruit part of it will be stricken out. Recognizing the importance of retaining that feature, Mr. President, I move that a committee of three be selected to confer with the committee of the Legislature having this bill in charge for the purpose of bringing before them the views of this convention concerning the matter.

The motion received support, and was carried.

On motion, the President was made chairman of the committee, and Messrs. A. C. Town and S. B. Mann were selected as his associates.

A. C. Town.—The Legislature four years ago made a mistake in its law-making on this very point. The State Pomological Society is doing a valuable work and should receive hearty support from the Legislature in such matters as these, recommended by specialists who have given a great deal of time and thought to the subject, having all the time in view the welfare and progress of the State. I recognize in the methods pursued by this society a careful understanding of what the horticulture of the State needs. The work accomplished for fruit-growing has received an impetus since the organization of this society not given in any preceding efforts of the State Agricultural Society, exhibiting to me the wisdom of giving such work directly into the hands of those who know the most about it.

Mr. Estabrook, of Saginaw, spoke earnestly of the value of statistics in all business operations, giving examples from the various enterprises of the world, and said that for the proper advertisement of the State the present bill should not only pass, but there should be a bureau of statistics as a branch of the State government.

The hour of adjournment having arrived, the subject was laid upon the table for further consultation at a future session.

The society, on motion, took a recess until evening, allowing time for the members to visit the Agricultural College during the afternoon.

Thursday Evening Session.

It was not contemplated in arranging the programme of this meeting that its sessions should extend beyond Thursday noon, but a request having been presented to the executive committee to hold a session Thursday evening in the Hall of Representatives, the invitation was accepted and the order of exercises extended.

The first paper of the evening was the

REPORT OF THE COMMITTEE ON FRUITS.

Mr. President and Gentlemen:

Your committee after a thorough examination of the fruit on exhibition in the hall beg to submit the following report: We find the contributions on ex-

hibition consist of 300 plates of apples made up of 63 different varieties, four of grapes, and a collection of canned fruit.

Considering the frequency of these exhibits by our society, and the remoteness of this location from many of the best fruit growing sections, we consider this a good show, and very creditable to the society, and to those engaged in fruit growing in Michigan. The fruit was arranged upon tables in the well lighted corridor of the fourth floor of the Capitol, and by a skillful placing of varieties so as to have colors in contrast, the exhibit presented a most attractive appearance.

Commencing at the west end of the center table in the hall we found from Ionia County 24 plates of apples and four of grapes, exhibited by Messrs. Hosford, Smith and LeValley, consisting of the following varieties: Three plates of Baldwins, two Red Canada, one Flushing Spitzenburg, two R. I. Greenings, three Northern Spy, two Golden Russets, two Roxbury Russets, one Henry Sweet, one Westfield Seek-no-further, one Yellow Bellflower, one Peck's Pleasant, two Swaar, one Ben Davis, one plate of seedling sweet apples, also one plate of Iona grapes, one Diana, one Isabella, and one Kalamazoo. The plate of Henry Sweet apple is very valuable and a profitable variety and the specimens extra fine.

The next exhibit was furnished by the Grand River Valley Horticultural Society numbering 20 plates of apples as follows: One Northern Spy, two King of Tompkins County, one Mother, one Gilliflower, one Jonathan, one Rawle's Genet, two Baldwins, one Ben Davis, one Winter Blush, one sweet seedling, one R. I. Greening, one Swaar, one Esopus Spitzenburg, one Dominic, one Yellow Bellflower, one Golden Russet, one Fameuse or Snow and one nameless variety.

We consider the plates of the King apple in this collection the finest of this variety on exhibition.

The Mother apples we believe to be a choice and rare variety, and should be in general cultivation.

The plate of Yellow Bellflowers found in this collection is superior to all other specimens on exhibition.

There is a collection of 21 plates sent here by Dr. R. B. C. Newcomb, from Blissfield, Lenawee county. They came from the parties whose names follow with the varieties and number of plates contributed by each.

One plate of Fallawater, one R. I. Greening, one King of Tompkins County and one Baldwin from L. E. Goodrich. One plate Swaar and one Yellow Bellflower from F. H. Brown, both specimens very fine. One plate Northern Spy, fully up to the average in quality, from J. P. Carpenter. One plate of Belmont and one Red Canada from R. B. French. One Limber Twig, one Pennoek, one Newtown Pippin, one Melon, two Ohio Nonpareil, one Sweet Russet, one Golden Russet, and one Ben Davis from Dr. R. B. C. Newcomb.

S. W. Fowler of Manistee, contributes the following: One plate of Baldwins, one R. I. Greenings, one Golden Russet, one Roxbury Russet, one English Golden Russet.

Mr. B. Valentine, of Lansing, had five plates: One of R. I. Greenings, one Esopus Spitzenburg, one King, one Black Gilliflower and one Pennoek.

Mr. L. B. Potter, of Lansing, has one plate of Peck's Pleasant, one Swaar, one Grimes' Golden, one Yellow Bellflower, one Winter Blush and one Perry's Russet.

Mr. A. Chapman of Van Buren county, three plates of Golden Russet, two Baldwins, and one Northern Spy.

The Coldwater Horticultural Society has placed on the table 19 plates as follows: Two R. I. Greenings, two Kings, three Baldwins, one Wagener, one Northern Spy, one Talman Sweet, one Fall Pippin in a nice state of preservation, one Red Canada, one Yellow Bellflower, one Rambo, two Western Spy, one Baltimore Red, and one of seedlings.

A. Morris of Lawton, shows one plate of Peck's Pleasant.

Antrim and Grand Traverse counties, represented by C. P. Avery, exhibit 24 plates of apples of the following varieties: Four plates Northern Spy, five of Golden Russets, two Roxbury Russets, one Wagener, one R. I. Greening, two Baldwin, one Snow, three Ben Davis, one Davis Apple, one Ortley, one Yellow Bellflower, one Talman Sweet, and one sweet apple with no name.

Mr. H. C. Sherwood, of Waterville, Berrien county, makes a show of the following: One plate Wagener, one Baldwin, one King, one R. I. Greening, one Roxbury Russet, and one Jonathan. It is but simple justice to say that this collection of six plates is superior to any other collection of the same number, and entitles the exhibitor to very much credit.

The collection shown by the Ingham County Farmers' Club, consists of the following: One plate Baldwin, one northern Spy, one King, one R. I. Greening, one Red Canada, one Wagener, one Talman Sweet, one Golden Russet, one Roxbury Russet, one Swaar, one Yellow Bellflower, one Esopus Spitzenburg, one Hubbardston Nonsuch, one Rambo, one Westfield Seek-no-further, one Twenty Ounce, one Pound Sweet, one Minister, and one Hyslop crab.

Prof. C. L. Whitney, of Muskegon, has in charge nine plates of apples of the following varieties and contributed by the following persons: G. A. Whitbeck, one plate Baldwin and one King; H. S. Tyler, two Baldwin and one Roxbury Russet; E. Wilson, one plate Golden Russet; C. Culver, two Baldwin, one Hubbardston Nonsuch.

Hillsdale county has a large collection here which are credited to the following parties: Mr. John Chilson, one plate King, one Twenty-Ounce, extra fine, one Long Pearmain, one Belmont, one Fallawater, one Yellow Bellflower, one R. I. Greening; Mr. A. Hewitt, one plate American Beauty, extra good quality, one Walcot, Peck's Pleasant, and one Baldwin; Mr. Henry Lyon, one Baldwin, one R. I. Greening, one Northern Spy, one Ben Davis and Newtown Pippin; E. Webster, two plates Baldwin and one R. I. Greening.

F. M. Holloway sends one plate Golden Russet, one Northern Spy, one Red Canada, and one Peck's Pleasant.

S. J. Moffatt, one plate Newtown Spitzenburg.

J. Quackenbush, one plate Fallawater, one Rhode Island Greening, one Baldwin, and one Fameuse.

J. F. Fitzsimmons, one plate Baldwin. We find in this collection one plate Baldwin and one Newtown Pippin not credited to any one.

Eaton county's contribution is made up of twenty-four varieties, to-wit: one plate Beauty of Greece, very fine; one Baldwin, one Rhode Island Greening, one Northern Spy, one Snow, one Sweet Wine Lass, one Golden Russet, two Esopus Spitzenburg, one Flower of Genesee, three Rhode Island Greenings, three Westfield Seek-no-further, and three Romanite. Also in this collection is one plate of Baldwin, one Golden Russet, and one Swaar credited to Wm. Foster.

Mr. A. L. Sturgis, of Okemos, Ingham county, has one plate Snow apple, two Baldwins, one Northern Spy, one Yellow Bellflower, one Rhode Island Greening, one Golden Russet, one Roxbury Russet, one Fallawater, one Esopus Spitzenburg, one American Beauty, one Peck's Pleasant, one Belmont, one

Blenheim Pippin, one N. Y. Vandevere, one Green Sweet, and one Vandevere Pippin.

Mr. H. F. Thomas, of Jackson, put on the tables three plates of Baldwin, one Wagener, one Rhode Island Greening, one Peck's Pleasant, one Belmont, one Red Canada, one Mann apple, one King, two Hubbardston Nonsuch, one Oakland County Seek-no-further, one Twenty Ounce apple, one Esopus Spitzenburg, one Northern Spy, and one Glória Mundi.

Mr. H. W. Doney, of Jackson county, exhibits two plates Baldwin, one Mann apple, one Rhode Island Greening, one Ben. Davis, one Northern Spy, two King, one Hubbardston Nonsuch, one Hubbardston Pippin, two Red Canada, one Swaar, one Oakland County Seek-no-further, one Golden Russet, one Roxbury Russet, one English Russet, one Wagener, one Yellow Bellflower, one Peck's Pleasant. This collection, Mr. Doney informs the committee, was furnished by Jefferson and Henry Daniells, John R. Pool, Walter Higgins, and from his own orchard.

We find four cans of preserved fruits which are very fine indeed, and are the property of Mrs. M. B. Tracy, of Old Mission, by whom they were sent up; one can of Philadelphia raspberries, one can Crawford peaches, one can Bartlett pears, and one can of cherries.

This, Mr. President, completes the list, and your committee has under some difficulties endeavored to do justice to all parties. The exhibition proves beyond a doubt that the winter apple is the great fruit of the State, and that the best varieties of the winter apple can here be grown in all their beauty and symmetry, of good size, and of perfect texture, as well as of the most brilliant color.

Signed by the Committee.

N. CHILSON,
C. N. MERRIMAN,
S. B. MANN,
H. C. SHERWOOD,
J. P. THOMPSON.

Following the acceptance and adoption of this report President Lyon read an able address upon

THE LABORS AND NEEDS OF THE SOCIETY.

The causes that conspired to elevate the extended ranges of mountains which limit and give direction to our prevailing winds; and which, while opening the broad basin of the Mississippi for their free passage, have interposed the broad unfrozen area of Lake Michigan, to moderate alike the torrid heats of summer and arctic frosts of winter, lie hidden far down among the unwritten records of a remote geology; unwritten by the pen of the historian; but it is this wonderful, and, to us, fortunate concurrence of apparently independent circumstances that constitutes our state what, to-day, it is acknowledged to be, the leading fruit-growing state of the northwest, and which gives to the motto upon our state escutcheon a force and appropriateness perhaps unthought of by those to whom we owe its adoption. The development and elucidation of this branch of our subject, however, is committed to wiser and abler hands, and we therefore invite attention to matters of quite another character.

Even as early as the seventeenth and eighteenth centuries, fruit trees were planted along our eastern borders by the French, many of which yet remain to demonstrate the adaptability of our state to the culture of fruit. These

indications, however, seem to have passed but for little with the earlier immigrants to the territory, as, although the orchard and garden formed a constituent part of most farms in southern Michigan from the first, little account was made of them, except for a supply of the home demand.

With the organization of a national pomological society, about the year 1848, and the sending abroad of a few small collections of Michigan grown fruits, for public exhibition, we may date the first faint dawning of the knowledge, even among our own people, that Michigan possessed special advantages in this particular.

Up to about this time little account seems to have been made of fruit as a marketable commodity anywhere in America, excepting possibly the immediate vicinity of a few of our larger eastern cities. Still, even during this early period in our history, there were not lacking persons with an active interest in this subject, and societies were from time to time organized for the purpose of disseminating information and encouraging more effective practice among those interested; but it was not till public attention had been strongly drawn to the capacities of the St. Joseph fruit region, at first by many supposed to be the limit of our "fruit belt;" nor yet, till with the rapid development of the northwest, and the growth of its cities, our near markets began to call imperatively for supplies of fruits, that an adequate consciousness of the importance of this interest, and of the necessity of concerted action came to be felt.

With the extension of commercial fruit planting northward, along the eastern shore of Lake Michigan, this interest continued to gather both numbers and strength, till the necessities arising out of its breadth and the magnitude of its operations began to call imperatively for such means of associated action as a parent society alone could supply. Out of these necessities has arisen this society, its organization dating from February 6th, 1871. It seems to have been foreseen from the beginning, that a corporate organization, sustained by legal sanction, would prove essential, and steps were at once taken to secure the enactment of a law under which it assumed the dignity of a body corporate on the 5th of July of the same year.

Early in the history of the settlement of our state, and before the farmer and lumberman had settled down effectively to the work of sweeping away our forests, and opening up the country, nothing was heard of the winter-killing of fruit trees; and the peach—now confined to the crowns of our highest hills, or driven under the lee of Lake Michigan—was successful always and everywhere. The unfortunate changes of climate to arise from the loss of forest protection were unthought of, and hence all precautionary provisions were omitted.

The State Agricultural Society early reached a position enabling it to do much in aid of the fruit growing interest; and so far as the offering of liberal premiums for exhibits of fruits at its annual fair could aid, its work has been well done. Still, many of the most essential needs of fruit culture, or perhaps we should say, of pomology, are so strictly peculiar to itself, that it was, and is, doubtless, too much to hope or expect, that a body of men, such as are managers of our State Agricultural Society, with so varied a class of interests especially in charge, would be able to fully appreciate and provide for their special needs; the proper understanding of which must require more or less acquaintance with the whole science of fruits and their culture, together with its practical application.

As illustrating the importance of this particular, and the difficulty growing out of it, we remark that there is usually little difficulty in selecting commit-

tees capable of distinguishing a Durham from a Galloway or even Devon : or a Merino from a Southdown : and a mistake of such a committee may generally be readily rectified at the time. On the other hand, it is extremely difficult to secure committees capable of surely determining the identity of many of even our leading varieties of fruits ; while thousands of planters are liable to be led, in consequence of errors of this character, to select, plant and grow up to fructification, spurious and even utterly worthless varieties—a mistake which it is oftentimes the work of a lifetime to correct.

The existence of this difficulty seems to have become the occasion of an arrangement by virtue of which the State Pomological Society has now for several years assumed at the fairs of the State Agricultural Society, the task of collecting and arranging the pomological and floral exhibits, together with the duty of framing the premium lists, and awarding and paying the premiums thereon.

The grower of farm stock, of wheat, or of corn, usually embarks in the business for a livelihood or for profit. Unlike him, the average fruit grower, (and in this class I include every owner of an orchard or fruit garden), commences to plant with scarcely a thought of pecuniary return, but rather upon the crude assumption that fruit is convenient as a means of adding variety to the *cuisine* of his household ; regarding the whole matter as too unimportant to demand care and judgment in the selection of varieties ; and, in the great majority of cases, leaving such selections to the nurseryman or even to some unknown or irresponsible "tree pedlar," who may perchance have a direct interest in mis-advising him.

The assumption is natural, and in the main doubtless correct, that a greater amount of practical knowledge and business consistency should be found among those who undertake the planting of fruits as a business matter, and for commercial purposes ; yet in practice even such planters far too often adventure upon the business with great lack of knowledge and experience.

Besides these difficulties, the cultivation, pruning and management of trees ; the gathering, selecting, ripening, packing, and marketing of fruits, taken in connection with their more or less perishable nature, demand a knowledge of the results of a very varied experience.

To wield the means placed in its charge for the dissemination of knowledge on these varied subjects ; to elevate the standard of culture ; to call to the aid of fruit culture such information from kindred sciences as may conduce to its higher success ; and to arm its devotees with such knowledge of the many and varied casualties and diseases to which both trees and fruit are subject, as shall enable them most effectually to guard against them ; and even to educate the fruit consumers of the country to a better knowledge of what is adapted to the supply of their wants, are doubtless a few among the numerous objects coming within the sphere of the Society's operations.

Although the name of the Society would seem to require that its operations be restricted within the sphere that such a name indicates, practice has long shown that there is no proper line of demarcation between Pomology and Horticulture : and that, no matter how carefully it may purpose to limit its operations within the sphere of the former, it will very probably be found occasionally disporting itself, unawares, upon the proper territory of the latter. In fact, though purporting to be only a Pomological Society, and notwithstanding the resolute unwillingness of many of its most earnest friends, that it should forego this time-honored title, it is, and has been, from the outset, in reality a Horticultural Society. In fact the culture and management of fruit trees

associate so intimately with that of shelter belts and forest growths for protection, and the small fruits so naturally coalesce or mix up with kitchen and ornamental gardening, that it seems hardly possible to even consider the one, while wholly omitting the other; to say nothing of the notorious fact that few devotees of either, fail to develop more or less liking for and practice of both.

To learn how earnestly and effectively the society has endeavored to acquit itself in the discharge of these duties, we only need to refer to the transactions of the eight years now past since its organization; merely premising that these, copious as they are, convey but a faint idea of the actual amount of self-sacrificing labor of which they are the recorded result. Within these years the society (in September, 1875) in a year of great and general scarcity, at the behest of the State, through the Legislature and the then Governor (John J. Bagley) undertook the task of collecting and exhibiting at the biennial meeting of the American Pomological Society, at Chicago, a general display of the fruits of the State. Again, in 1876, the Society responded to the call of the State Centennial Commission, and in obedience to its request, undertook the onerous task of gathering together and dispatching to the Centennial exhibition, a collection of fruits adequate to enable the State to take the highest rank among the competing States; which collection it maintained in perfect condition by continued renewals, till the close of the exposition in November. Those who were careful readers of the current news of that period, need hardly be told, that both the exhibit of the previous year's fruit in May, and that of the current year's crop in September and October, attracted great attention from residents of both Europe and America; with valuable results in the way of directing the attention of the more intelligent class of emigrants to our State. In justice to the multitude of contributors to these exhibits, it should be kept in mind that the whole was supplied gratuitously, and with no possible hope of remuneration, either direct or remote, beyond the gratification of a feeling of State pride.

The impression had for some time been growing upon the society that the mere framing of lists of fruits to be recommended for general cultivation, was of doubtful benefit; since such lists were rarely made the basis of selections by planters. To remedy this failure, in whole or in part, a plan has been devised for the preparation of a catalogue of the fruits grown in the State, so classified as to indicate the localities in which they have been tested, and giving their relative values for dessert, cooking and market, respectively; with such additional remarks as shall more fully or perfectly indicate the value of each variety; thus supplying the planter desiring to select his varieties for a specific purpose, with the means to select wisely from those known and proved in the State.

It is intended to subject such catalogue to annual revision, in the light of added experience—such revision to appear in the succeeding year's transactions; the whole to be done upon the basis of information collected by a standing committee, with assistant chairmen located in the various sections of the State. The society has also under consideration the proposition to provide for the issue of an additional edition of such catalogue in pamphlet form, for more extensive circulation, both at home and abroad.

Through the voluntary aid of several of the faculty of the Agricultural College, the society has from time to time been enabled to afford to its members in common with other attendants upon its sessions, much valuable information

upon sciences bearing more or less directly upon horticulture, among which we may especially note botany, entomology and meteorology.

The much that the society has found to employ its energies during its comparatively brief existence, and the many broad but unoccupied fields upon which it has been so far unable to enter, reminds us strongly of the death-bed remark of Sir Isaac Newton, who, at the close of his busy and eminently successful life, is said to have remarked: "I seem like a child that has amused itself by gathering a few of the most beautiful pebbles upon the beach, while the immense ocean lay undiscovered beyond."

The field is indeed broad! too broad for the narrow means, and the merely volunteer energies at the command of the society. Were it able so to do, it could very profitably expend means as the Iowa society has done, in the preparation of a set of *fac similes* of the fruit and vegetable products of the State, for use upon occasion in the study, comparison and identification of varieties when out of season, or otherwise not accessible.

It could very properly and profitably enter upon the collection and classification of the indigenous, and possibly even the introduced vegetable products of the State; also specimens of the valuable woods for which our native forests are noted, as well as the many that would be valuable as indications of the capacity of our soils and climate for other purposes. It could indeed, with great propriety, collect specimens of soils in connection with the plants indigenous to them, as well as statistics of the local peculiarities of climate; including averages and also extremes of temperature and rainfall occurring in connection with them; deducing from the whole, conclusions as to the agricultural and pomological capacities of such region.

Much more might, and doubtless ought to be done in the way of educating our land owners as to the most economical and effective arrangement of woodlands in connection with cleared fields, and even the proper location and management of artificial timber plantations, as a means of holding in check the unfavorable and often even calamitous changes of climate, consequent upon the extensive clearing away of our forests, and the opening up of farms.

Much might doubtless be accomplished in general aid of these various objects, in the mere accumulation and arrangement of a library of reference; and this the society could easily and rapidly do, in part at least, under its existing system of exchanges with both sections and individuals; but for this circumstance so naturally resulting from the semi-cosmopolitan character, that it has no place that can be designated as its "head-quarters."

It may seem a useless waste of time to indulge in the enumeration of the many fields of profitable labor that invite the efforts of the society, but which demand more expensive or continuous efforts than are found practicable under its system of voluntary unpaid labor; hence these suggestions have been indulged rather as the warrant for a few remarks as to the importance to the state of an elaboration of some at least, of these sources of information, with the probable result of bringing to light sources of wealth to the people, and hence to the state; accompanying the same with some suggestions of possible modes by which such results may be reached, either independently, or in connection with processes already in progress.

The most obvious and natural source from which to anticipate this kind of work, would be the State Board of Agriculture, or possibly the Agricultural College under its direction; but unfortunately for such purpose, they are not charged with such work, nor are they provided with either the force or the

means needful for such purpose. Besides, no member of the board is understood to be in any proper or direct sense a representative of the horticulture of the state, and hence qualified to mark out and direct the processes necessary for the proposed work; while, in obedience to the dictum of the state constitution, the college is located in a region more than usually unfavorable for the working out of some at least of the purposes indicated, though this would not affect that portion of the work lying away from the institution, which would, however, take those charged with it away from duties at the college.

In consideration of these difficulties, we are able to conceive no more convenient or satisfactory mode of providing for these wants, than by the appointment of a representative of horticulture (which in Michigan is, and is likely to be, mainly pomology), who shall be *ex officio* a member of the board of agriculture, with an office at Lansing, and who shall be charged with the various duties necessary to the development of horticultural interest in the state, as well as a knowledge of the capacity of our soils and climate for such pursuits.

But we may be asked: Is it not unreasonable to propose that the state provide a commissioner of horticulture, while the more important interest, agriculture, is not so represented? We reply that agriculture is, beyond doubt, the more prominent interest; but its needs are fully provided for, through the board of agriculture, with the college and its corps of professors; and while conceding the propriety of this, we esteem it not merely reasonable, but the dictate of the highest expediency, that in a state so especially adapted to the pursuit of fruit culture, and in which so large an amount of capital is, and is being invested in this business, this branch of agriculture should be accorded at least a single member of the board, and one too who shall owe his selection directly to that interest, and be capable of commanding its confidence, from his personal identification with, or knowledge of its pursuits. It is proposed that he shall be a member of the board of agriculture, for the reason that he can in such case operate in the fullest harmony with both the board and the college, as to any and all matters of common interest.

But it may be asked: Why should not his office be at the college? To this we reply, that it is essential that he be accepted as the representative of popular horticulture, and for that reason that he be readily accessible to all. This at the college would not, and doubtless ought not to be practicable, since it would too seriously interfere with the proper work of the institution, to say nothing of its location remote from commercial access.

Another reason why not horticulture alone, but agriculture especially, should have a name, place and recognition at the capital of the state, and even within the walls of the capital itself; one commensurate with their importance, relatively to other interests, is that this grand building—the creation of the people's will—built with their money, is in an important sense the home of the state—a place within which the visitor expects to see the interests by means of which the commonwealth has been built up and enriched, adequately represented; and we submit that it must be but a sorry comment upon the degree of appreciation with which the state regards these great interests, that it is only by a special or occasional courtesy that they can properly be said to be known or recognized here. It may indeed be said that the agriculture of the state has a place at the college, and that it has not asked for space here; but this, even if true, cannot in our estimation justify the propriety of ever permitting its absence; since it is an indispensable portion of the great mutability

of state interests, and its absence must necessarily mar the symmetry of the whole, leaving upon the mind of the observer from abroad the impression that if we can be said to have either agricultural or horticultural interests, they must be of comparatively slight importance. Those who may visit and examine the state college and farm, will doubtless acquire correct ideas of the matter; but they are likely to be as the few among the many.

Mr. George Taylor next addressed the Society upon the subject,

FORESTRY.

HOW TO PRESERVE AND KEEP UP A SUPPLY OF PINE AND HARDWOOD TIMBER IN MICHIGAN.

On the 3d of December last, at the meeting of this Society held at Paw Paw, I had the privilege of then bringing before that meeting my first communication on the subject of forestry in relation to Michigan and some of the neighboring states. I there pointed out in the first place the importance of that subject as being one of the great natural sources of our wealth and industry, and some of the great losses we were so frequently sustaining by our forest fires, caused in a great measure by the want of due precaution, and the necessity of something being immediately done to preserve and cultivate what we had left in accordance with the laws of forestry. I there divided our timber forest trees into two classes, the pines and the deciduous hardwood trees.

THE WHITE PINE.

This is the tree that chiefly furnishes the immense supply of our pine lumber, and its mode of culture will, in a great measure apply to all of that class of the pine family. As is well known, most of the pine are found growing in a sandy soil which seems to be more congenial to them than a deep loam or a strong clay, which is so necessary to many of the hardwood timber trees. I mention this fact as it is found most expedient to cultivate the two classes separately, and also as the pines require to be grown more closely together and of a simultaneous age and size in order to produce the best clean timber. This is a point well known and strictly observed in the pine forestry of Europe and there is no doubt but that the same law is applicable in this country.

The first question then is, by what means are our pine forests to be kept up and renovated? Can a succession be kept up on the same ground, or would it be the best means to an end to make an entire new plantation? In answer to this I would say from what I know of the habits of the pines, that the growing a succession on the same ground by cutting out the mature and leaving the younger would not be found quite so practicable with them as with hardwood trees, because as I have mentioned, it is best that they should be of the same age and size, and that a successive plantation would be neither expedient nor profitable. Therefore, I consider it would be much better to have a new plantation made all at once with young seedling trees especially raised for the purpose. This is what other countries have found necessary and we should profit by their experience.

A GRAND ENTERPRISE.

I consider that the time has now come when it will pay to buy some of our cheap lands adapted for the growth of both pine and hardwood timber and set out regular plantations in accordance with the principles of forestry as is prac-

ticed in other countries. In many of the northern and middle counties of this State where much of the pine timber has been cut down and destroyed by fire, I would recommend that such land should be totally cleared out, and whatever is of value could be appropriated for some use, and all that was not could be collected into heaps and burnt up at once so that the land would be all clear for a new plantation. The only thing remaining in the way would be the old stumps, but as farmers contrive to get around these in the cultivation of their various crops, so I am certain that trees could be planted, though with not quite the same facility as on land where there is no encumbrance.

Having your land already prepared, say 20, 30 or 50 acres, you must consider where you can procure trees. I should be happy to fill such an order for two or three hundred thousand of the seedling plants necessary, provided that I had two or three years' previous notice that such young trees were wanted. I do not propose to tell here how I would raise these from the seed and transplant and cultivate in the nursery till they were of the proper size for planting out. This is a separate business, and in this country requires a good deal of both skill and attention. But as my business is just now to show how planting is to be done, and that with the greatest facility, I shall proceed to describe what I have done myself and seen others do upon a scale much greater than that of which I am here speaking.

THE MODE OF PLANTING.

This depends on certain circumstances, namely, the nature of the ground to be planted, whether it abounds with old stumps, or is clear land that has been under cultivation; also the kinds of trees to be planted, whether of pines or hardwood, and likewise the size of the seedling plants. In Scotland the greater number of the pines and larches are set out on a turf and on some of the higher grounds partially covered with heath. In this case the plants are generally from a foot to eighteen inches high, and are planted with a slit or cross cut made in the ground with a spade somewhat in the form of the letter **T**. A boy goes along carrying a bundle of the trees under his left arm, and while the man is making the cross cut the boy is selecting a tree in his right hand ready to put into the opening, which is made with a sort of lever pry by the man with the spade, thus holding the turf up while the boy slips in the tree and deftly gives the roots a turn round so as to spread them fully out, when the man gives a firm tread with his foot to make the ground solid round the neck and root of the tree, thus finishing the work.

A great deal depends on the nature of the ground for getting on quickly. In favorable cases a man and a boy will plant 250 trees in this way in an hour.

The hardwood trees are generally planted in pits made with the spade, as the roots are larger, and the work by this means is more sure and successful. When the plantation consists entirely of pines and larch they are generally planted on a square of four feet. This distance is found best for two reasons: as in the first place, they soon cover the entire ground so as to completely keep down all weeds and grass, and then by being so close together the tendency is to grow up straight, while the side branches in this way are kept in subordinate bounds. But this is only what is termed in forestry a nursing process, which may continue till the trees may be about eight to ten feet high, when, possibly, one-third or more will require to be cut out.

THINNINGS.

These thinnings in Scotland are found to be an article of necessity with the

farmer for making what is called net stakes, which are used with a net as a temporary fence in a large field of turnips, where their sheep are fed in winter and where a small space is inclosed at a time till the whole field is eaten and used up. These thinnings are also used in pallisade fencing, etc. As the trees continue to grow up pretty thick together, the tendency is for the small, lower branches to die off, and after a certain time, when about twenty or thirty feet high, another thinning will be found necessary, and those cut out are sawed for a kind of fence board. The remaining trees of the plantation have in this way got room to grow to full size. I have here been speaking of an entire plantation of pine and larch, but sometimes, where the land is good and capable of growing hardwood, a certain number of these are planted along with the pines, which latter are gradually cut out to give due relief, so that ultimately, the hardwood will occupy the whole space.

A GOOD SHOWING.

The landlord class in both England and Scotland are now fully realizing the great importance of making large plantations of all sorts of timber trees. It was begun about 60 or 70 years ago and has been going on increasing; but it got a great impetus when railroads became a fact, especially in oak and larch timber, which is now used for ties. While all this has added greatly to the beauty of the landscape, it has also been a great source of profit to the agricultural interest, especially on some of the higher grounds, in affording shelter for sheep and cattle in winter; valuable crops of both grain and turnips are now being raised on lands which formerly were a bleak and barren sheep-walk.

I have been giving this description of the planting and rearing of pine timber with an eye to the future interests of Michigan, but on looking at some of our great neighboring States to the south and west of us, we see extensive and fertile prairies stretching out in all directions, with scarcely a tree to meet the eye except sometimes a few 'round a farm homestead. We see abundant crops of wheat and corn, with other farm produce, which shows the land is rich and capable of growing all sorts of timber trees, provided they were only planted and cultivated. We see also, that in these prairie States great quantities of timber is required for the construction of buildings, fences, railroad ties and many other purposes, but as yet there has been comparatively no systematic effort made to grow a future supply of timber.

TREE PLANTING ON PRAIRIES.

For expediency and economy all large plantations that are being made adjacent to or surrounded by cultivated land should be laid out in a square form. It may either be a long strip of a few rods across, or an entire regular square, suitable to the convenience of the farm and other surroundings of the place. I am not speaking of landscape gardening, or how a good residence should be placed in a park, properly laid out and surrounded with a certain amount of evergreen and ornamental trees. This is also a subject of great importance, especially in some of our western states, where large and fine houses may sometimes be seen improperly placed, and with certain surroundings which are anything but ornamental. Taking it for granted that the square form is the best, as it stands in relation to farming operations, and that the best season for planting is spring, especially in our northern states, we proceed to prepare for the work. If the land has been in previous cultivation it would be well to have it prepared in the fall, the same as if for wheat or any other crop. Our first operation is to have the land marked off into squares in something of the

same way as we prepare for planting corn. The marker which I use would be a plow, with which I would run a straight furrow, as deep as convenient, making the lines four feet apart. Having made all these parallel furrows on one square, we commence at the outside of the other at the same distance and at the same depth of furrow, and when finished the whole plat will stand out in squares of four feet. This shows exactly how many trees will be required, as one will be placed at each intersection. If not deep enough for the roots of the tree, a very little work with a spade will make it all right, and then with a boy holding the tree a man can soon fill in sufficient clay to cover the roots, when a good tread round the tree will finish the work of planting.

CULTIVATION.

I would recommend cultivation for two or three years till the trees begin to cover the ground and so keep down a growth of grass and strong weeds. In making such a plantation there ought to be certain spaces left for a road—a wagon way. When the process of thinning and cutting out is necessarily gone into, every thing can be collected and got out with care and convenience, and one thing should be strictly guarded against, allow no accumulation of dry tops and underbrush to remain, but collect and burn it so as not to endanger a general conflagration.

THE KINDS TO PLANT.

In regard to the kinds of trees to be planted, that in a great measure depends on circumstances, as the kind of soil adapted to the growth of certain varieties, and especially what kinds are in greatest request for general purposes. There may be some landed proprietors whose chief object in planting may not be so much for timber as for having a belt or windbreak combining an ornament in summer with shade and shelter for stock and the farm buildings in winter. I consider that no windbreak should be less than four rods wide with room for a wagon road in the middle. If intended to shelter from prevailing west winds, I would recommend the planting of two rows of Norway spruce on that side and one row of the same or some other dense evergreen tree on the east side. This would give both a finished and ornamental appearance, and in the intervening central spaces might be planted a variety of our finest deciduous hard-wood trees to give a pleasing and varied effect to the whole plantation.

As every farm should have a good orchard, it would be well to have this so placed and arranged as to come under the shelter of this grove. The whole thing should be got up to combine and ensure three great objects of farm life—the useful, the ornamental, and the profitable—and I am certain that if this object in beautifying the farm homestead was more carefully attended to there would be fewer of our farmers' sons leaving the paternal roof.

DUTY OF THE GOVERNMENT.

The government and state were the original possessors of the soil, and have sold and granted a great amount of this, but still possess vast quantities in certain districts to be so disposed of or used as they may see fit. Now on some of this there is still a great amount of good timber of various kinds, and as all sorts are now getting scarce and valuable, this ought not only to be preserved, but so managed and improved in the way of forestry as greatly to enhance its value for the future. I consider that this great source of national wealth, so very essential to our future welfare, should come more especially

under the care of the government, which ought to have a special department, not only to watch over and preserve what we still possess, but to carry out all those improvements which would tend to increase its value.

A HINT TO RAILROAD COMPANIES.

The next in our country that have a great interest in forestry are the railroad companies. If it is growing on their own lands they ought to see that it is properly preserved and cultivated, but on a great part of these lands that are prairie or without timber they should at once put out extensive young plantations of such varieties of trees as are best adapted to the soil and most suitable for railroad purposes. There is another advantage which these companies would derive from tree planting, and that is, all the lots for sale in the intervening sections would be greatly enhanced in value by reason of the shelter and protection which they could not fail to derive from the adjacent plantations. Some of these companies have extensive land grants of alternate sections, and in order to construct and maintain these great national highways a vast amount of timber will constantly be required for ties, bridges, telegraph poles, buildings, etc. The first thing necessary for these companies to carry out a proper system of forestry, would be to have a special department in that line, and a head with proper knowledge and skill to carry the work into effect.

AND TO FARMERS.

The third party that has by far the greatest interest in this timber question is the farmer and landed proprietor, who, as cultivators of the soil are more specially interested in all those products that are found so indispensable to the welfare of the general community. The farmer that now plants out a good breadth of timber will find it the most profitable investment and one that will increase in value for 50 or 100 years to come. Timber is coming to be estimated according to its future value. It is not an annual but a permanent crop, and must therefore put an immediate value on the land on which it grows. Land with young thriving timber of the proper sort, if offered for sale, brings a remunerative percentage in value for the outlay in planting.

CONCLUSION.

The influence general tree planting would have on the climate, on crops and especially on the cultivation of fruit, would be most beneficial, and there is no doubt its influence would be greatly felt as a sanitary measure in affording shade in the heat of summer and shelter from the cold blasts of winter to both man and beast. To all these advantages may be added the great improvement of the general landscape and especially the grounds surrounding the home, which, being tastefully laid out with clumps and single specimens of shade and ornamental trees, makes a standing picture of nature and art to be admired by our children and all others. It would induce a love of country and a spirit of patriotism so that we would cordially endorse the sentiment, "There is no place like Home."

RESOLUTIONS AND ADJOURNMENT.

Mr. Chilson, of Battle Creek, offered the following resolution, which was unanimously adopted:

Resolved, That we regard it as expedient that the State Agricultural and Pomological Societies offer premiums for wind breaks, both of natural and artificial growth, when planted or maintained as such for the protection of gardens, orchards,

and farms, and that we recommend to the executive committee of this society that it take action for this purpose; also that we invite local societies to do the same.

Prof. Whitney from the committee on resolutions offered the following statement and resolution which received the unanimous vote of the house:

Not a decade since, this the Michigan State Pomological Society became a legal organization by the decree of the State Legislature. To it was granted certain powers and means of operating, and disseminating knowledge—enough for the time, but its growth has not only kept pace with the advance of the age but has even exceeded it in some respects.

Six thousand copies of its annual reports were once enough, but with doubled population and a more greatly increased interest in fruit culture, the demand for the reports is far greater than the supply. Therefore

Resolved, That we would earnestly ask the attention of our Senate and House of Representatives to the wants of the people and petition them to favorably consider the bills introduced yesterday to increase the number of the publication.

After the adoption of appropriate resolutions of gratitude the society adjourned *sine die*.

THE SUMMER MEETING.

HELD IN THE CITY OF MUSKEGON, JUNE 17, 18, AND 19. REPORT OF
THE DISCUSSIONS AND FULL TEXT OF PAPERS AND ADDRESSES.

The strawberry meeting of the society was held in Rifenburg's hall, Muskegon, commencing with an evening session on Tuesday, the 17th of June. The attendance from abroad was very satisfactory, there being about fifty delegates from various parts of the State; the local attendance, however, was very meager, owing, it is said, to the fact that all the interested parties were in the midst of their strawberry shipments, from which it was difficult to get away. Mortimer Whitehead, corresponding secretary of the Cincinnati Horticultural Society, was the only representative from outside the State.

MUSKEGON AND ITS SURROUNDINGS.

As prefatory to the account of discussions it seems appropriate to say a few words about Muskegon. Mr. J. P. Thompson, who, previous to the session of the society, made a short tour of the place, says:

Muskegon is a city of 12,000 inhabitants, located at the mouth of the Muskegon river on Muskegon lake, or which is about the same thing, on Lake Michigan, a city of modern saw mills, with the largest lumber manufacturing interest and capital of any city in the state. Never having seen the place before, we were astonished at the modesty of its inhabitants. Put Muskegon anywhere else and its picturesque situation and novel surroundings, its beautiful lake surrounded with puffing mills, its busy population and its gigantic manufacturing interest, would have been heralded the world over, but Muskegon seems content with its lot, and does not seek a mere paper reputation. A ride from the center of the city south around Muskegon lake to outlet to lake Michigan, a distance of say seven miles, and again from the center of the city north across the mouth of Muskegon river along the beach of Muskegon lake to where Bear lake empties into the former, a distance of say another seven miles, is one of the most enjoyable, the most varied and delightful to be taken in the whole country. We should say that it was about 20 miles around Muskegon lake, with a good level saw-dust road nearly the entire distance and with a view and scenery at once interesting and attractive, so that people from abroad need not want for points of interest, or for fresh air, or for water and land views that can be found nowhere else in such amplitude and striking originality. With a needed good hotel building, safe and spacious, there should be many summer visitors. We have never seen in the state a more magnificent harbor or a combination of commerce and manufactures

larger or more extensive. From the north side of Muskegon lake the view embraces the city of Muskegon, its handsome court house, its high school building, its numerous churches, its many fine residences, while along the banks of the lake for 10 miles or more are saw mills, boarding houses and cottages, the whole making a picture of American life that has a fuller characteristic expression at this point than at any other in the country. Steamers arrive and depart each day. Sail vessels come, are loaded in almost an hour, and depart. The population has increased 1,000 at least this season. There is no idleness; steam and smoke arise from a long line of pipes and chimneys.

It was here that the Pomological Society, on invitation, pitched its tent. Mr. Holt, Mr. Peck, Mr. Ruddiman, Mr. Whitney and others believed it well to cherish a little the horticultural and agricultural idea. The time is coming, some years distant, when the Muskegon river will refuse to deliver its annual crop of pine logs, four hundred million, and it is well to look forward to the future.

The orchards and vineyards around Muskegon Lake are not unknown. We noticed a fine vineyard owned by Mr. B. Moulton, containing at least 11 acres of well cultivated vines. Mr. Ruddiman's old residence, at the mouth of Bear Lake, is the center of as good a fruit district as may be wished, and here were cherries, peaches, small fruits and flowers, with exemption from early or late frosts. The country is provided with strawberry patches and plantations aggregating 500 acres planted to this popular fruit. The owners were busy with the pickers, gathering and shipping the harvest.

FRUIT PROSPECTS.

On Tuesday evening at eight o'clock President T. T. Lyon called the Society to order and the Secretary read a number of letters from various parts of the state giving accounts of the fruit prospects. Among which were the following :

GRATIOT COUNTY.

W. O. Fritz writes :

"I am glad to report every thing more favorable in the fruit line than usual at this season; apples, peaches, plums, grapes, and cherries promise an abundance, small fruits were never better. We have had some late frosts but apparently little injury has resulted."

BENZIE COUNTY.

John J. Hubbell writes :

"Apples as a rule blossomed lightly but the fruit is well set, which is favorable for the vitality of the trees. Most of our bearing orchards are young and set for family use, but of late a large number of orchards have been set for market purposes containing only standard sorts; these are not in bearing but look healthy and thrifty.

Peaches, old trees which were on favorable sites, and all young trees grown since 1875 are set full of fruit. The trees are healthy and no sign of yellows. When this disease drives the peach-growers out of the southern lake region let them look up Benzie county; we have much high land, good soil, within the lake lake influence and convenient to Frankfort harbor, where peaches always have done and will do well, and being so isolated from the great peach-growing belt,

we expect to escape the yellows for many years. We have no large peach orchards as yet.

Pears had full bloom on all trees that were large enough and set full; the only trouble is we haven't old trees enough, many young trees have been set in the last four years with but little sign of blight.

Plums, a few old trees are on most every place, but set along the fence or in such positions as to prevent fighting the "little turk," and he is here in full force. We can have no plums except we work for them. Many have surrendered and still let the trees stand in the hope that something will happen to the curculio and they will bear fruit again, but in the meantime they are stocking their county with the pest, notwithstanding this our fruit men are setting plum trees by the thousand and intend to fight the curculio.

Cherries—only a few trees, and they do not live long, but all live trees are full of fruit.

Small fruit prospects good,—mostly wild berries are used by the citizens.

There is a prospect of a full crop of strawberries, but no large plantations of them, the spring is late and strawberries will not be in their prime before July 1.

KALAMAZOO COUNTY.

J. N. Stearns writes:

Fruits of all kinds are looking exceedingly well, especially is this true of small fruits. Some kinds of apples, like the Baldwin, that bore too full last season, will have few apples this year. Peaches are looking excellent, wherever there is a tree it hangs full. Cherries, both sweet and sour, are fruiting abundantly.

A word about strawberries. I fear it will be some time before we find a berry to take the place of the Wilson for a market berry, and I have heard the expression made quite often this season by parties from town testing the different varieties, "Well, it is hard to beat the Wilson." After all I still place the Chas. Downing ahead of all I have tested for a table berry, being hardy, productive, and of the best quality, the fruit stem being very long, the fruit is easily kept from the ground.

INGHAM COUNTY.

W. Asa Rowe writes:

Usually the fruit crop of central Michigan is not of sufficient importance to materially effect the growers on the lake shore unless it be on apples. There appears to be a tendency now growing up, however, to plant and grow a sufficient supply for home markets of such small fruits as do well in the interior. Especially is this true of strawberries and blackcap raspberries, of which increased areas are planted about here every year. Strawberries are sometimes hurt by late frosts, and the ends of black cap canes are killed even when well pinched back in the summer, but they never fail to give at least a partial crop where cared for, and the local market is usually fair.

The prospects for fruit of all kinds is good so far as I have observed. Apples will probably be an average crop. Cherries more than an average, except in some few localities where killed by frost.

Peaches will be plenty if nothing befalls them. This is a little unusual as, except in very favorable localities here, we do not get two peach crops in succession, and we had a fair peach crop last year. Many farmers are planting

peach trees this spring and getting them all ready for the winter to kill, as the next severe season must do for they are not suitably located.

Strawberries promise well, only a few of the very earliest being frosted.

Raspberries look well and will give plenty of fruit if it is not too dry. One of our growers says he can and does almost entirely overcome the effects of a drouth by a daily cultivating during the ripening season. Blackcaps of the various kinds are almost exclusively grown, as the red varieties not only winter-kill badly, but they do not seem to sell as readily in the smaller towns about here.

Blackberries scarcely grown at all—too tender.

Grapes not much grown for market, although most families have a few vines. Promise a good crop now, but early autumn frosts may affect them.

BARREY COUNTY.

A. C. Town writes:

Fruit prospects in Barry county are about as follows: Apples, light crop as compared with last year; pears, full crop; peaches, trees loaded; cherries, good crop; few plums raised in county; raspberries and strawberries, never a better crop.

GRAND TRAVERSE COUNTY.

A. P. Gray writes:

In reply to your circular would say, that I took a trip down the peninsula, the result of which is about as follows: There is no one, so far as I have seen, who can leave his business at this time (unless it be Judge Ramsdell), to attend the meeting at Muskegon. I had intended to be there myself, but as the times draws near it seems impossible.

The prospect for fruit is very flattering, except for apples, which bloomed rather lightly, and yet some of our best fruit men say their best crops have been grown under similar circumstances. Pear trees in general are heavily loaded. We shall have the largest crop of cherries ever harvested in the Grand Traverse region. A frost June 6th injured the grapes and strawberries on some of the low lands, but did no damage on the fruit lands proper.

EATON COUNTY.

Mrs. R. M. Cook writes:

The prospect for apples was never better as far as I have been able to learn. This is the off year for apples, but the last year's freezing thinned the fruit out so that we shall have a good crop this year. It was a good lesson, and the wise will profit by it.

Early cherries all killed by frost; late cherries very promising. Strawberries backward but an abundance of them. Grapes set very full of blossom buds; none in bloom yet that I know of.

The out-look for all kinds of wild fruit uncommonly good.

A CANADIAN LETTER.

A very complimentary letter was read from B. Gott of Arkona, Canada, in which he showed that the reports of our society were thoroughly appreciated by the people of his vicinity, and he wished us God speed in our enterprising work. He reported a very promising prospect of fruits of all kinds in Canada.

VAN BUREN COUNTY.

Prof. C. D. Lawton writes:

I am enabled to report that the Lawton Pomological Society is in a very flourishing condition. Weekly meetings of the society are held, at which questions pertaining to horticulture are discussed. The society possesses many members of intelligence and of much experience in fruit-growing, whose presence at these meetings tends greatly to make them interesting and profitable.

The appearance of the yellows last year in our midst has checked the setting of peach trees, so that comparatively few were put out last spring; but an unusual amount of grapes, chiefly Concord and Delaware, were set, also a considerable quantity of small fruits—raspberry, strawberry and blackberry. The blackcap varieties still take precedence, though this season considerable alarm is manifest in regard to the rust.

Commissioners under the new yellows law have been appointed in several of the adjoining townships who are diligently at work removing traces of the disease. It is the determination to act effectively in this matter. A good deal of grafting was done this season in bearing orchards, to change the trees into Baldwins. The prospects for the season are good; strawberries and raspberries will be an unusually large crop—seldom if ever better. Peaches never were more promising than now—trees apparently healthy and vigorous and well set with fruit. Grapes have met with no drawbacks; the vineyards are looking magnificent, and the promise of fruit cannot be excelled. Apples, it is judged, will be a medium crop, not so full as last year, but better generally than it was two years ago. Altogether our fruit growers are thus far very well satisfied and hopeful. They are now busily engaged digging out borers, catching curculio, cultivating their vineyards and orchards, and picking and marketing their strawberries; so closely engaged that I fear none of them, unfortunately, will be able to be present at your meeting, but I am instructed to send greeting and the hope that your session may be an enjoyable and profitable one.

I forgot to mention that cherries, though considerably damaged when in blossom by frost, still promise a fair crop and of some kinds and in some situations a very full one. I know of some orchards of early Richmonds that are very full.

ORAL REPORTS.

After finishing the letters several gentlemen reported from their various localities as follows:

W. A. Brown of Berrien County.—Peaches we are exterminating. We want to enforce the law until we are through with the yellows, and perhaps by-and-bye we can again under proper restrictions and conditions raise this delicious and profitable fruit; about one-third of the strawberries were killed but there were a great plenty left considering the prices. This season is peculiar as to markets, as never before we are brought into competition with the berries from places as far north as Muskegon. The early blossoms having been cut off we are having our main crop, some later than usual, which is very damaging to the market. Apples and cherries are light with us and the first setting of grapes were killed but the dormant buds are so developing that we shall have a nice crop with no farther drawbacks. Raspberries hang full, and blackberries will be very light on account of freezing. This is very strange too, for we had a mild winter and apparently favorable to blackberry canes, but

notwithstanding this from some unaccountable peculiarity the vines were much injured.

Mr. Bridgman of same county spoke of certain statements that came from the southern part of the county saying that peaches were promising well and little or no signs of the yellows visible. Apples blossomed very full but failed to set fruit. The prospect for wild fruit is too fine for the good of the cultivators.

Mr. Brown.—I desire to say one word concerning Mr. Bridgman's reference to the yellows. This disease is in the southern towns of our county and there is abundance of testimony which I can bring to bear by a visit to that locality in a few weeks. Either the people there do not know the disease or are willfully perverse in their statements and equally foolish. The fact is we must meet this matter squarely and use every means in our power to eradicate diseased trees and fruit.

Mr. Emmons Buell, Kalamazoo, said every thing in the fruit line promised well in his section; the strawberry crop is enormous.

A. Chapman, Van Buren county, spoke of his Crawford peaches being very thin, but other varieties very full. Said they would get no cherries because nineteen-twentieths of them were taken by the cherry bird. The law ought to protect us from the robber.

Mr. Culver, of Muskegon, said the fruit prospect of his county was just moderate. In the north of the county, he knew a large peach orchard that promised well; just about the city the frost had done a good deal of damage. Pears promised better than for a number of years. Apple orchards are variable on account of condition of trees. We supposed we had a poor soil and must stimulate some years ago. It was a mistake, for it only fixed the trees so they were the more damaged by severe winters.

Question.—Does the curculio injure you?

Mr. Culver.—No; for we make a good fight of it and come out ahead.

Mr. Graham, of Grand Rapids, said he had by accident learned a fact concerning curculio. Having left his coat in the crotch of a plum tree over night, and upon getting it, 300 curculio were taken from under it.

A Voice.—That tree could not have been under very careful surveillance previously.

S. B. Peck, of Muskegon—Grapes about town that were not favorably situated, were very much injured by the frost on the night of the 7th of May.

Several gentlemen inquired about insects, particularly the rose beetle and snowy tree cricket, and were referred to back volumes of our reports for the information desired.

The meeting then proceeded to discuss the first topic upon the programme, what is the

IDEAL MARKET STRAWBERRY,

and what varieties approximate to it?

W. A. Brown, of Stevensville.—The ideal market berry with us is the Wilson. We have 4,000 acres planted to it in our immediate vicinity, and I would name as next to it the Triomphe de Gand, and next the Monarch of the West. I spent two days in Chicago last season with the avowed purpose of learning the answer to this very question, and visited all the prominent commission houses only to find that with unanimity they placed the Wilson first as a mar-

ket berry. In many instances where careful selection had been made and the packages well put up, they had brought as good prices as the fancy berries.

President Lyon.—A decision of this question can not be reached without consulting first the man who raises the berry; second, the man who buys it; third, the man who consumes it. To illustrate: Any body can grow pretty good Wilson's, but it takes a man of experience to grow the *Triomphe de Gand*. But if both be grown at their best and put upon the market there is no question but the latter will outsell the former many times over. You do not have to grow, box, transport, and sell so many of the *Triomphe* to make a definite amount of money as you do of the Wilsons. There are few that will carry this idea out, and hence there is the better chance for those who will.

Geo. W. Bridgman, of Bridgman.—The ideal market berry must be the one that under the best of care and experience will bring the largest income. We can not dodge this definition, the market berry is for money. We do not look to the ease with which it may be raised or the palate of the consumer except so far as each has an influence upon our pockets. If the Wilson is the ideal there is not much to be made in the culture of strawberries, if we judge by the profits this season on this berry. We are, I apprehend driven to one of two alternatives in market strawberry culture. We must, in the aggregate, raise less berries or we must have an admitted better berry to compete with the Wilson. I never have lost confidence in strawberry culture. With wheat at one dollar per bushel strawberries ought to bring a correspondingly small figure. They are not a novelty any longer, but have the same competition as grain or apples.

We need to know a good many conditions to name an ideal market strawberry. Mr. Knox on his famous farm could succeed with the *Jucunda* admirably and make it a prominent market berry—but it is exceptional to find a locality or a man to raise fine *Jucundas*. The same is largely true of the *Triomphe*. To make money out of strawberries a man must give them close attention now a-days any way—so that this condition we must admit as a common one—but soil varies and it is found that varieties suited to one soil will not flourish upon another so that I can not see just how we can decide upon a single ideal market berry.

Question.—What berry comes the nearest your ideal in your locality under your individual conditions?

Mr. Bridgman.—For sand I should name the *Champion*, even although it is a pistillate berry and must have fertilization from mixing with another with perfect flowers. For my own soil I should be troubled to select out of five or six varieties.

A Voice.—Name them as they occur to you in the order of their value.

Mr. Bridgman.—That is quite a difficult task and possibly I might not hit the same order a second time because they are so near alike with me. I hesitate but will run the risk as follows: 1st. *Champion* or *Monarch*; 2d. *Cinderella* (perhaps); 3d. *Black Defiance*; 4th. *Triomphe de Gand* or *Jucunda*. *Durand's Beauty* has been a very promising berry with me since I have had it.

Question.—What about the *Crescent*?

Mr. Bridgman.—I am plain to say I have as yet no definite opinion upon the *Crescent*, although I am growing it to some extent.

The hour getting late the meeting adjourned until morning under the arrangement that the topic should then be resumed.

Wednesday Morning.

After the reading of some correspondence by the secretary the discussion was resumed upon

THE IDEAL MARKET STRAWBERRY.

The secretary stated that the gentlemen in discussing the question had not struck at the point aimed at in framing the topic. The naming of varieties that come nearest to the ideal one was subsidiary to the main query, to wit: What are the characteristics which make up an ideal market strawberry? Shall it be large or small, dark or light color, acid or sub acid, hard or soft, seeds prominent or sunken, glossy or dull, etc.?

J. P. Thompson.—In the face of our secretary's statement, and only with a desire to pin the discussion down to something definite, I offer the following resolution:

Resolved, That the strawberry known as Wilson's Albany is our ideal market berry.

The resolution having received a second, Mr. Thompson proceeded to say:

I have been watching the markets a long time, have been consuming large quantities of strawberries in my family, and I find the following are some of the facts about the Wilson. It is brought into market on all the roads, and is found in every market in the greatest profusion; it is a heavy producer of fruit, outstripping almost everything else; it is a good carrier, and from this attribute receives the praises of producer, expressman, railroad man, commission dealer, retail dealer, and the consumer even praises its firmness. I refer you to our catalogue prepared by our worthy president (and I wish no better authority than he); see how the Wilson is marked there!—*ten for market*. What does this mean, when the scale runs from one to ten? It means that the Wilson is there graded as perfect for market, and we can not get around our own catalogue. It is already our ideal market berry until that figure is lowered. Are you prepared to cut that figure down? When you come to canvass the matter, gentlemen, if the Wilson is not your best market berry, what is? You will find it very hard to make a substitute.

C. N. Merriman, of Grand Rapids.—I can by no means endorse the sentiments expressed so forcibly by the gentleman just up. A year ago I heard him speak very differently regarding this berry, and saw him make wry faces at the mention of its name, and was much pleased to endorse him in these manifestations, and regret exceedingly that he should have been a backslider in this business.

Mr. Thompson.—I was talking about a berry to eat, then, and not one to market. I was speaking from the stomach's standpoint. It is money now.

Mr. Merriman.—For my own part I would willingly throw the Wilson overboard, and would not hesitate even to make the substitution that has been suggested as so grave a responsibility.

Mr. Johnstone, of the Michigan Farmer.—What is the standard, is our question. The resolution regarding the Wilson berry I know has been thrown in; still our original question is looking to a berry without a name, but with satisfactory points for market purposes to place it at the head of the list. I do not believe we have reached perfection as yet in this line, and would hesitate very much to put the Wilson in that distinguished position. It is a good

berry and I think a good deal of it. Not long hence it may be superseded by a better sort, one that will "scale higher," as we say in grading shorthorns. I knew Mr. Wilson very well when he was performing his experiments which culminated in the berry named after him. I know very well, too, that he did not think he had reached an ideal market berry, but he had the best one then extant. There may be others already in the field that will easily take the precedence, but whichever way we move as a society let us be cautious.

Mr. Bridgman.—Nature has not put all the desirable qualities in a strawberry, and the conditions are against her doing so very soon. For instance, to have an ideal market berry I would have it last at least six weeks. I would ask the gentlemen who are reaching after the ideal, what berry approximates to this standard?

President Lyon.—In a market berry we want, first, size,—not a few large berries and a large number of small ones, but a good many large ones. In other words we want plants that will grow large berries throughout the season. The Wilson is very much below this standard. Second, we look to firmness; that is a quality of fruit when ripened that will enable it to be transported to market under proper precautions and reach there in a fair condition. No one desires to purchase strawberry mash. Third, color is a matter of importance. The color attracts the eye, and secures oftentimes the purchaser. The perfect berry should not only have good rich color, but persistency of color, and further, should not take on that color too soon, so as to deceive in the ripeness of the fruit. I never have seen a perfect man or woman,—I may have my favorites and prejudices in this matter,—neither have I found perfection in a strawberry, nor do I ever expect to, but by carefully making the most of the aggregate of experience, I hope we shall grow nearer to our ideal.

Mr. Wilde, of Berlin.—I sent for the Wilson berry twenty years ago, and have grown it ever since in considerable quantity. I have sold this berry for \$11.00 per bushel in the Milwaukee market. It has stood a good test. I am loth to give it up, but as sure as it has risen, it will fall, and its place will be filled by another. I am very much pleased with the Champion, and were its flower perfect it would immediately step in ahead of the Wilson.

W. A. Brown.—We have in Berrien county over 4,000 acres in strawberries, and 99-100ths of them are Wilsons, at a safe estimate. Even with this knowledge, I should hope the gentleman would withdraw his resolution.

Mr. Thompson expressed a willingness to do so, and the following was offered as a substitute by Mr. Merriman and carried.

Resolved, That we have not as yet reached so high a standard of excellence in the strawberry as to name any variety as "an ideal market berry."

The next topic was announced by the president. "What is

THE IDEAL FAMILY STRAWBERRY,

and what sorts come nearest to it?"

The discussion was opened by a short essay from the pen of Benjamin Hathaway, of Little Prairie Ronde, as follows:

It should be a sure producer under all circumstances—at least under all circumstances in which it is reasonable to expect fruit. To this end it must be hardy, as hardy as the native strawberry—the old Virginia Scarlet.

The fruit should be fair in quality, but not the best, for to have the highest flavor we must give up measurably both quantity and the certainty of productiveness. It should be better than the Wilson, but not as good as the Chas.

Downing, for I venture to say that there never has been a variety originated with the flavor of the Downing, and never will be, that will produce as much fruit as the Wilson with the same culture.

It should be a berry of fair size, but not large; for large size, like fine flavor is also opposed to productiveness. There should be, however, uniformity of size. Not a few large berries to begin with, and the rest small and then smaller to the end.

It should belong to the scarlet family for several reasons. It is the only family entirely hardy, that will stand unflinchingly both the freezing of our winters and the scorching of our summers. The scarlet berries I find uniformly to hang longer after they are ripe without spoiling than the dark varieties. And as for flavor, while some varieties are insipid or too sour to be worth growing, as a class they possess a peculiar aroma and sprightliness not to be found in the descendants of the foreign sorts, and by means of which the genealogy of any variety may be traced.

The fruit should be moderately firm, or may be, but this is a point of less moment. For canning, firmness is desirable, but for the table a berry of a more delicate texture is to be preferred—at least, suits my own taste better.

One feature that is only found among the scarlet varieties, I believe, and that I count of great value, is the habit of parting readily from the hull, so that the fruit can be picked all ready for the table just as easily as the other varieties can be picked with the hull on. It is not all of the scarlet varieties that have this peculiarity, but many of them have, and in a family berry it is very desirable.

The habit of the plant should be considered no less than the character of the fruit. The plant should make but few runners; should be like the Wilson in this respect. One trouble with most farmers' strawberry beds is, they are suffered to become a swamp of plants, that makes fruitfulness impossible. And the reason the Wilson is so popular, not alone among professional growers, but all classes, is this habit of making comparatively but few plants.

Members would like to inquire, no doubt, if I know any strawberry that fills all these requirements. Not all of them perhaps, but very nearly.

The Michigan strawberry is that variety. Some of you have this sort, and how it may do with you I do not know, but on my grounds every one points it out at once as the most productive of a dozen or twenty sorts. The plant is a perfect type of healthy vigor, and never fails of fruit when there are any strawberries grown.

Had I time I would like to compare the different varieties I am growing in all their different characteristics, with the Michigan, and show wherein the latter had the advantage, especially as a family berry, over them all.

Mr. Johnstone pointed to a fine plate of Jucundas, and said that came about as near his ideal, at least from the appearance of the plate, as any on exhibition. At least he wished every family could be supplied with all they wanted of as fine berries as those.

President Lyon.—That reminds me of a remark made concerning Mr. Knox's Jucundas, which were the best I have ever seen. It was this, that his berries were as large as turnips and almost as good. The truth is that the Jucunda sadly lacks in quality, while it has many excellent characteristics otherwise. Again, the ordinary family care of berries would grow very poor Jucundas.

Mr. Bradfield.—One character that should go with a family berry would be fatal to a market sort,—that is non-persistence of the calyx. We want to pick the berries for the table and leave the hull upon the vines.

Mr. Wilde.—My impression has been very favorable toward Mr. Shirts' new berry as a family variety.

Mr. Shirts spoke of his seedling as being of good color and form, with a calyx easily removed, and exhibited samples picked from young vines which were certainly superior.

Mr. Bridgman.—It is very difficult to have a firm berry and a soft one in the same variety, and that is just what we must have if we put together the necessary elements for an ideal family berry. We want a soft berry for the table, but it is just as necessary to have a firm berry for canning purposes. The Black Defiance I would name as the nearest my ideal of a berry for home use. It has quality, color and firmness, and still is not so hard as to make this an objection for table use.

Mr. Merriman.—City people want family berries as well as the grower, and we want to put the qualities into our market berries that will render them excellent for home use.

Mr. Lyon.—But this is impossible. The market berry will ever be a different berry from that we would choose to grow in our own garden, which need not be transported farther than our own tables before it tickles the palate.

W. A. Brown.—The Triomphe de Gand I like well for a home berry. It has, it seems to me all the qualities save one, that is, few will give it the requisite care to secure it in perfection.

F. A. Gulley, of the Agricultural College.—We raise a large number of sorts as you will see from the array of berries here from the college garden, and my own choice for a berry to pick and eat at my own table would be the Matilda first and Col. Cheney second. These are both too soft for canning, but the Black Defiance, as suggested by Mr. Bridgman, is the berry for that purpose.

Mr. Bradfield, of Ada, spoke in terms of praise of the Seneca Queen which he had grown for two years; it held out in size until the last one was picked.

Mr. Lyon also spoke of the same sort as an excellent family berry with him and also mentioned the Golden Queen, but maintained that we were not in the realm of perfection even yet as to family strawberries.

Mr. Thompson.—A number of gentlemen in Detroit banded together for the purpose of ascertaining the best eating strawberry and the result of the season's experience is this list: Captain Jack, Col. Cheney, Chas. Downing, and Triomphe de Gand.

Mr. Lyon.—This list would be more valuable if the gentleman, allowing them to be good judges, could have chosen from some other place than the market, because the best sorts rarely go into market, and more rarely are properly named.

Mr. Gulley asked how the Crescent stood.

Mr. Reeves, of Benton Harbor, spoke very highly of this variety as grown in his locality.

Mr. Bridgman.—The society can not afford to give the Crescent very much of a puff; it is not always satisfactory, very variable and too soft, and beyond this has not proved to be very hardy.

The society next proceeded to review the

STRAWBERRY LIST IN THE FRUIT CATALOGUE.

Several additions were made to the catalogue, including the Crescent, Centennial, and three new seedlings, the Shirts, Marvin, and Windsor. The grading of a number of sorts was changed by unanimous vote.

The contest was over the Wilson's Albany, which was marked in the society's catalogue at the highest figure, 10, in a scale of 10, as a market berry. Mr. J. P. Thompson, of the Post and Tribune, moved that this mark be reduced one point, to 9. He said the Wilson was demoralizing the market. From the standpoint of the consumer he said it was an imposition to shove this strawberry upon the fruit-loving community. A market berry should possess something beside size, color and firmness—it should possess some quality. This berry would ruin the business. Anybody could grow it. Any fool could grow it. The glut in the market which had brought the market down to 3, 4 and 5 cents, was occasioned by this Wilson which growers were producing in excess. Consumers were sick of it and would not buy it. They asked for something better and were willing to pay for it. Quality in fruit should be the aim of the society and not mere quantity. The strawberry business was a good one, but the men engaged in it would soon ruin it if they persevered in glutting the market with the Wilson. He was willing to acknowledge the great merits of the Wilson as a market berry—but people who paid their money for strawberries wanted, and would have, something better or else would cease buying. Let us knock the Wilson down just one point.

Mr. Bridgman, of Berrien county.—Nature has never concentrated all qualities in one berry. I like the Wilson when it is pretty mature. I think that size, color and firmness are the main points in a good market berry.

Mr. Merriman, of Pentwater, said the Wilson was not worthy of a high mark—it should be put down.

Mr. Whitney said that growers must abandon the Wilson or the strawberry business would come to an end. It is too cheaply raised.

Mr. Johnstone, of the Michigan Farmer.—We must look for the strawberry of the future as well as of the past. The Wilson has been of great service; but to say that it is perfect is to say that the Concord is a perfect grape.

A gentleman said this was the keynote of the whole thing: Glutting the market with a cheap growing variety like Wilson was killing the trade. The Wilson was flat on the market. Growers had pandered to the selfish idea and would lose money. The whole business must be changed and quality must be a ruling principle with producers as well as with consumers. Consumers were getting educated. The growers must learn as well. Four cents a quart was fast teaching them.

Calls were here made for the question and for a division, when by a rising vote the motion to put the Wilson down one peg was carried.

The society now took a recess until two o'clock.

Wednesday Afternoon Session.

At the opening of the afternoon session several new seedling berries were brought forward for consideration, and on motion they were referred to the committee on fruits, who were instructed to report upon their prospective value and give them a name if they saw fit, the report to be subject to adoption by the society.

The essay of the afternoon was prepared by Mr. H. S. Tyler of Muskegon upon the subject of

INFLUENCE OF STOCK UPON CION.

Mr. President, and Gentlemen of the Society :

While your association has within the few years of its organization done a vast amount of good to the fruit-growers of this state, having touched almost every matter relative to culture, improvement and production of the various kinds of fruits adapted to the climate and soils of Michigan, I have heard but very little said on the effect or influence of the stock upon the cion, in grafting the apple either upon the root or top.

I have read a few hints thrown out by different persons that the stock exerted a great influence upon the productions arising from engrafting one kind of fruit upon another, but to what extent no one has ventured to express any very decided opinion, and for the purpose of gaining information upon that point I shall state briefly some observations taken by myself upon the question as to the effect the stock may have upon the fruit produced by cions engrafted upon the root or the top of the apple tree.

In the early part of my life, and while a resident of New York State, my attention was directed to the question here presented by the very marked difference in the general appearance, keeping qualities and flavor of the same kinds of apples grafted upon and gathered from different trees.

It was an observable fact that in gathering the Rhode Island Greening, as an instance, that with trees of equal vigor and health, the fruits were variable in size, flavor and keeping qualities. The same held good with the Baldwin, the king of apples, for beauty, keeping, and for profit, and with the Esopus Spitzenburg, whose sprightly, aromatic flavor, has never been attained by any other good keeping winter apple, combined with that glowing beauty to attract the attention of the lover of the good and the beautiful and thus place it at the head of the list for ready sale in the market. Although at that early date the difference was not so apparent as now, for greater uniformity existed in all of the kinds of apples named, there was then no difficulty, even on the part of the school boy, in determining either of the kinds named readily at sight, and also the names of others which have met with equal change in desirable quantities since that time. While now it is no uncommon occurrence to find the experienced fruit-grower in doubt as to the correctness of names attached to plates of apples placed on exhibition at our fairs, although they are veritable Greenings, Baldwins and Spitzenburgs.

But for the purpose of placing before this Society for their consideration the causes of the change apparent it is only necessary to mention the few named varieties, and as it would not interest you, gentlemen, for me at this time to enter upon a lengthy dissertation upon all of the questions that might have a bearing upon the final results of the case, I shall attempt somewhat to fathom the mystery of the change produced upon some, or all of the varieties named.

About the year 1849, at the time of gathering apples, I noticed while gathering that the several varieties named were quite different in general appearance, upon different trees. Some of the Greenings were very large and perfect, somewhat inclined to russet, others medium in size, but smooth skinned, and others small with russet spots, yet all possessed the type of the Rhode Island Greening unmistakable in all. They were all grown upon top-grafted trees that had borne fruit for some years, prior to working over, that were not considered of sufficient value to retain them in their primitive condition. The large very nice ones were grown upon a healthy, strong growing, sweet apple

tree, that had produced large russet fine fleshed winter sweet apples. The medium was grown upon as perfect a tree every way and the next in the same row, but had produced before grafting a sour apple of good size, but entirely worthless except for cider.

In making my observations at that time I came to the conclusion that the stock was mainly the cause of difference, and from that time to the present I have repeatedly noticed that changes have been going on destroying to a great extent the original character of the fruits herein referred to.

The large and excellent Greenings referred to were pronounced the par excellence of the winter fruit for the dessert, on account of their rich and mild flavor when at maturity and on account of their superior excellence. Cions were repeatedly taken from the tree to perpetuate its kind, and engrafted in the tops of other bearing trees, in some cases producing other changes as apparent. In one instance where the same was grafted upon a vigorous growing sweet apple tree the acidity of the natural Rhode Island Greening was still farther removed.

I might cite other instances in connection with this question, but these instances for example serve as a base upon which to build a hypothetical case, and I will come to the conclusions I have by experiments and observations arrived at, namely, that the laws of life are the same in the vegetable as in the animal kingdom. That botanical science, while it reveals and has brought to light many of the principles of plant life and growth, it fails to teach the method of continuation in its purity of a desirable variety of fruit or vegetable. That scientists have based very much of their belief upon theory, which is purely mythological in its character, no thoughtful person will deny. For instance, in the question now before us they will tell you the stock is only the medium of support to the cion, that its kind may be further continued in its purity to any extent by grafting, regardless of the nature of the stock. They tell you the grain of the field draws its continued existence from the mother earth, forgetting the logical reasoning, that the cion by transmission may draw health, vigor, and quality, and prolongation of life, or disease and destruction from the stock the same as in the animal kingdom. Life and vigor, disease and death may be engendered by transmission of blood. The situation of the cion and the grain is entirely unlike. While the grain draws its support direct from the earth the cion gains its support by transmission.

Although scientists have given much to the people for profit, they have led very many astray upon this question in fruit-growing by false theories of plant growth and production, but withal have awakened thought and brought the minds of many to action, and the practical man is beginning to take the matter in hand for experimental investigation to establish the truthfulness or falsity of past theories, thereby developing and bringing into activity the divine principles of creation and improvement innately given to man, his greatest heritage, from the Father Spirit of the universe.

Allowing then, my position to be correct, it follows that to bring any kind of fruit to its highest state of perfection, and to so continue it, it becomes necessary to know the qualities to be gained, as well as to understand the laws and principles of its maintenance, and none but the true and untiring experimentalist and worker for effect can expect to develop grand results, and that with knowledge based upon the experience of the past, aided by the theories and experiments of veteran pomologists of the country. I will sum up my conclusions by premising that for success in attaining and holding a desired point of excellence in the growth of fruit, the stock must be known to be healthy, hardy

and productive, and of a kind, either sweet or sour, adapted to the maintenance and perpetuity of those qualities of the kind which are sought to be maintained. And with the philosophic principle held steadily in view, that the least in a principle carries the greater, the persevering and intelligent fruit-grower will realize a profit from his labor, as well as to leave inscribed upon the tablet of time in gilded letters: I have done something with which to benefit my fellow man. My earth life has not been spent in vain.

Hence my position develops the fact that by promiscuous root or top grafting, unaided by design to continue all of the good qualities of a kind, but operated for the purpose of rapidly multiplying trees for the markets, will always prove disastrous to the best interests of the orchardist, and carry with it more or less disappointment, loss of time and money, instead of profit and pleasure. If now in conclusion, Mr. President, I have by these few remarks opened up the way by which this question may be fully discussed and investigated by the scientific and practical orchardist, I shall feel that I have accomplished something in behalf of the fruit-growers of our country, and that I have not labored in vain.

Mr. Thompson.—This is a question of "breeding," and a very important one. I am led to quote very similar views as Mr. Tyler's from an article written by Mr. Benjamin Hathaway, and found in the first report of this society's proceedings. [Here followed the reading of extracts from Mr. Hathaway's essay.]

Mr. Tyler at this juncture showed samples from three trees of Baldwins grafted with his own hand, which certainly were very different.

Mr. Fuller, Grand Rapids.—Do you believe that by proper grafting upon suitable stocks we may get so far away from a given variety as not to recognize the parentage?

Mr. Tyler.—Certainly, I do; and my opinion is simply the result of careful experience of my own.

Mr. Lyon.—I am satisfied that great changes may be accomplished in the manner suggested by Mr. Tyler, but there is a limit to the variation, and I doubt if one could graft far enough away from original stock so that it would not relapse back occasionally to the original form.

The next topic was announced as

THE POSITION OF THE BALDWIN APPLE IN MICHIGAN.

Prof. Beal.—The Baldwin tree is somewhat tender, but not so defective in this respect as I once supposed. As a market fruit it has many points of excellence well-known to all pomologists. Even in this terrible climate, in central Michigan, the Baldwin tree can be grown in perfection without difficulty. To do this, unusual care must be taken to have the soil well drained. This term, "well-drained," means more than most farmers and fruit-growers are inclined to believe. The site for this severe climate should be elevated, and the soil not black and loamy. Relative height is of more importance than absolute height. Every piece of land that will produce good Indian corn will not produce good Baldwin trees.

Henry Holt, Cascade.—I am done with the Baldwin. My trees were killed by the hard winters some years since, and I have no faith in its hardiness for this state.

President Lyon.—We are in about the same latitude as New York and New England. They are perfectly healthy and hearty there. As you go west

from New York, the Baldwin grows less and less valuable. Its natural territory stops at Lake Michigan and a little south of our state. He did not understand the reason of this,—why it should not be as successful here, under apparently the same conditions, as in New York and New England. It could be raised in Michigan, but not so certain as farther east,—it grows a little larger, too.

Mr. Buell, of Kalamazoo, said he was conversant with the Baldwin in western New York. We can raise just as good Baldwins, he believed, in Michigan as in any other state. Don't consider it best for Michigan—don't compare with Canada Red in productiveness—Red Canada will bring one dollar more a barrel than Baldwins. Last fall when Baldwins were 75 cents a barrel in Decatur, Canada Reds were bringing \$1.75 for all that could be bought. He recommended that the Canada Red should be top grafted on Northern Spy at two years of age.

Mr. Dickinson spoke in favor of the Baldwin. His Baldwins had good soil, clay sub-soil. Cold winters didn't affect his trees. His may do better than others. His land was level, not sheltered from cold weather particularly.

Mr. Wilde said the Baldwin was profitable for market,—nice in every respect.

W. A. Brown said the Baldwin paid more than all others. He had sandy loam and raised the Baldwin for profit. I have seen the Baldwin at Lincoln, Nebraska, and would scarcely recognize the variety.

Prof. C. D. Lawton.—I am decidedly of the opinion that the position of the Baldwin is at the head of the list of apples for Michigan. Certainly in Van Buren county there is no apple that will compare with it as a profitable market fruit. It does uniformly well, and is the only one of which this may be said, on all kinds of soil and in all situations. The tree is a stout, rapid grower, comes early into bearing, is very productive, and is free from blight and disease, and when well established is sufficiently hardy for the Michigan climate; the fruit is large, of good form, fine red color, solid and firm, and possesses superior shipping and keeping qualities, and is well known and accepted in all markets and among all classes of buyers.

All fruit-growers in this section are uniform in their testimony of its surpassing excellence; it would be difficult to find a person acquainted with the matter that would not mention the Baldwin as first in the list of apples. In my own orchard the Baldwin is the only apple that has thus far returned me any appreciable profit, though, unfortunately, I have as many Rhode Island Greening trees, Spitzenburg and Golden Russets as I have of Baldwins. Mr. N. H. Bitely has a fine large young orchard adjoining my own, of which one-third are Baldwins, the trees have been set fourteen to fifteen years and he has kept an account of the results and says that the Baldwins have paid thus far 15 per cent. on the total investment which they represent—i. e., cost of time, interest, cultivation etc., the remainder of the orchard consisting of Russets or Spys. My Seek-no-further, Esopus, etc., have paid very little. Another neighbor, Mr. Jason Atwell says that his Baldwin trees have paid in a single year \$15 to the tree, and that if he were going to set 1,000 trees he would set all Baldwins; he is, as rapidly as possible, changing his other trees into this variety. I might quote numerous statements and testimony of this character, derived from intelligent farmers and fruit-growers, in favor of the Baldwin. The Rhode Island Greening does not bear well, no matter what the kind of soil. I have observed it in every variety of soil which the country affords, and have inquired frequently of farmers who have the trees in their orchards, and sometimes where they exist in locations and in soil that I deemed favorable, but have

yet failed to find a single person who pronounced the bearing qualities satisfactory. I do not wish to discount the Greening, it is my favorite if it would bear; I only speak of it since it is one of our most prominent and acceptable varieties.

President Lyon thought he would rather grow Baldwin trees to sell for 25 cents than Red Canada trees for \$1, but he believed with good care the Red Canada would pay better than the Baldwin. The latter drop badly when ripening and are troubled much more by the codling moth.

Mr. Whitehead of New Jersey:—In New Jersey the Baldwin apple is not a winter apple. In southern Ohio it is not as good as the Rome Beauty. In northern Ohio it is more hardy.

Mr. Wilde of Berlin, said Baldwins in his locality would not stand the winters unless top-grafted on hardy stocks.

President Lyon remarked that all trees were more tender root-grafted than when grafted in the top.

GRAPE VINE FLEA BEETLE.

A few larvae upon vine leaves were shown by Mr. Bradfield of Ada who said they were becoming quite troublesome with him and Prof. Cook gave the following notes:

These little beetles and the grubs which come from their eggs are becoming quite a serious pest. Two years ago Mr. Bradfield sent me specimens in June with a letter in which he expressed strong fears for the future of grape culture, unless the little leaf-eaters could be vanquished. One year ago Mr. Van Auken, of Lansing, sent me the beetles in May, which he reported as gouging out the buds of his vines much to their injury. This year I have secured the beetles from Three Rivers, St. Joseph county, from Howell and from Ypsilanti.

REASONS FOR HOPE.

These pests seldom continue to exist in sufficient numbers to work serious damages many years in succession. I know of vines that suffered greatly in 1876, but which have been almost free ever since. But if all places are not so fortunate, we still have only to know how in order to quickly banish these pests of the vineyard.

NATURAL HISTORY.

The little blue beetle, hardly one-fourth of an inch long, hibernates during the winter, in cornices, under boards, etc. Early in May it comes forth with the buds of the grape, which it appropriates as a sort of wedding cake, for now are the days of love-making and marriage with these beetles. The beetle jumps about lively, which peculiarity gives the name to its genus, *Hollica*. Its brilliant blue color gives the name chalybea to the species. They soon pair and the clusters of yellow eggs are glued to the under side of the grape leaves. Soon the dark grubs appear and may be found of various sizes in late May and early June. From the middle to the last of June they descend to the earth in which they form earthen cocoons. The pupæ are yellow. In July the beetles are seen again, but now the leaves are grown, and as the grubs do not appear again no special danger will result from their presence after July 1st.

REMEDY.

By sprinkling the buds in May with Paris green and water, the beetles may be killed and the evil nipped in the bud. Later the dust of lime or Paris green will kill the grubs. I should have no fear of sprinkling the vines so early, the green could not poison the grapes which do not ripen till September.

Mr. S. B. Peck, one of the oldest members of the society in point of membership, and the oldest in years, presented the following essay upon

MUSKEGON AND THE STATE POMOLOGICAL SOCIETY.

Man is eminently gregarious; to this fact he owes almost all that he knows except to eat and to walk. But for this fact our forefathers might have plowed with a hooked stick for hundreds of years longer than they did. To this fact man owes almost all that he knows of the arts and sciences. The very insects that we combat are wiser by instinct than is man. The story of Casper Hauser, whether fact or fiction, illustrates the condition of a man without associates. He simply knew how to write what was supposed to be his name and to repeat the only sentence he had been taught. Man is inventive and imitative. He invented a rude shelter from the burning sun and from the storms. Nearly all the rest that he knows of architecture has come to him from his association with his fellows. The English, French and German speaking people seem naturally progressive, and for the half century just past, have made greater progress than ever before during their histories, but even now in the last half of the nineteenth century, few go beyond the beaten track of their predecessors. Whoever goes beyond this beaten track is sure to have a crowd of followers, some to criticise and condemn, other to admire, follow and improve. It is thus that we march on towards perfection. The man who does not associate with his fellows and teach them something and learn something from them is a hermit and a miser. Even two farmers who talk at each other from their respective sides of their division fence, learn something from each other. How much more can be learned from an assemblage like this, composed of intelligent and experienced men, occupying different soils, devoted to different branches of pomology and horticulture, and those other branches of science connected with them (climatology, entomology, and vegetable physiology), when they meet and discuss questions of interest and relate their successes and failures? I say to my friends who are in any way devoted to any branch of agriculture, and who have not joined this society, you cannot afford to dispense with the teachings it affords by its discussions at its meetings, and by its annual reports, costing to you only an annual membership fee of one dollar, less than half the price of any other book of equal value to you. Of the value of these reports I quote from a letter from an enthusiastic pomologist, a working member of the Western New York Horticultural Society, a society fourteen years older than ours. "I am in possession of the two last reports of your State Pomological Society, and they are certainly a credit to the intelligence of your people. They contain more valuable and practical matter than any other publications within my reach. I prize them very highly." He refers to the reports of 1875 and 1876. Good and valuable as they are, they are certainly in no way superior to that of 1878, now ready for distribution.

MUSKEGON AND ITS SURROUNDINGS.

It may be expected that I or some one else will have something to say of our city and its surroundings. The city has been derisively styled the Sawdust

City. A more euphonious and equally appropriate name is "the City of a Thousand Oaks," and still we glory in our sawdust; "a workman is known by his chips." We have already begun to export it to places destitute, we pave our streets with it, we encroach upon the water and make land with it, and have fully demonstrated that it was not made in vain. In making it we cut yearly around our lake, lumber enough to lay a floor over eight thousand acres.

We often hear people who never cultivate any land say that our soil is worthlessly barren, so light and sandy that a warranty deed will not hold it. Our apology is that sand is a very important element in agriculture. It is a component part of all fertile clays. No soil is adapted to all vegetation; what we need is to know how to manage it. The astonishing growth that we sometimes see here admonishes us that we do not well understand its culture, or how to produce its maximum of products. Turnips have been raised, which with their tops of thirty inches length weighed eighteen pounds and the small strap leaved variety, that could not be got into a half bushel; and we defy California and all the world to produce more weight and bulk of squashes, than have been grown here from a single seed, dropped accidentally, and without culture. The natural growth of peach trees when decently cultivated is not to be beaten. Our grapes never suffer from rot or mildew, and if we plant early varieties only, we are successful. They require little rain but a large amount of heat, and though our soil is warm we do not probably get the mean summer heat of the interior of the State, but this is more than balanced by our high winter and fall temperature; but the half ripened grapes with which our market is every year stuffed, admonishes us to plant only such kinds as will ripen.

If we have not developed as much in the science of pomology as our neighbors north and south of us, there has been and is now, a very good reason for it, aside from the general adaptability of our soil and climate. We are four and a half miles in a direct line from Lake Michigan; between us and it (except at the narrow outlet of the river) there intervenes high sand bluffs that operate in a measure to shut off the influence of that deep body of water. Other points on this shore so far as I learn that have been more successful are more elevated in their aspects, and nearer the big lake and have been more fortunate so far as this science is concerned, in the location of their settlements. I say *fortunate*, for it seems to have been a matter of convenience for other kinds of business than that of fruit-growing, that has guided us in these locations.

ATMOSPHERIC DRAINAGE.

Subsequent settlers, in investigating the local causes of success with fruit have invented the expression, "Atmospheric Drainage." The man who invented that phrase is justly entitled to all the blessings so fervently bestowed by Sancho Panza upon "the man who invented sleep;" for this phrase when fully understood explains one of the great secrets of successful tree and vine fruit-growing everywhere, most especially when combined with the vast influence of these great heat-retaining bodies of water.

We are not here by any means destitute of choice fruit points, but their being somewhat isolated from business centers, but more especially for the lack of knowledge which the phrase quoted expresses, they have mainly thus far been left unimproved, leaving to the future occupant who shall have learnt more from the experience of others, and who shall understand better this

air drainage, to develop our natural advantages of aspect and commercial facilities.

I repeat the phrase "atmospheric drainage" as a text to be preached from, and for explanation I refer you to the several articles on this subject that have appeared in our annual reports which explains the reason why in cases of late and early frosts, fruits succeed in one place and fail in another, but short distances apart. It is a subject to be carefully studied by all who plant a tree or a vine. You may plant your berries in the enclosed valleys with a reasonable hope of success, and if frost destroys the fruit or the plant, it is only for one or two years, as the plants may be renewed, but fruit trees are planted for a longer term, and grapes for a century, and it well becomes us to select for them such terrestrial aspects as will secure permanency.

TEMPERATURE.

There are other reasons for failure and success in fruits and tender vegetables planted about our homesteads, not perhaps at this time so well explained. I allude to the capacity of different kinds of matter to receive and retain the heat of the sun after it sets. As a rule those substances that are the slowest to receive heat are the slowest to part with it. Earth and water, the two kinds of matter we have most to do with, are good illustrations; the former receives readily the heat of the sun as soon as it appears, but parts with this heat rapidly as soon as it disappears. Water is the reverse, slow to receive and part with heat, requiring thirty times as much heat to raise it up to the same temperature. I state these facts simply as illustrations of what follows. Our buildings, whether of wood or brick, hold the heat received during the day much longer than the bare earth, and their influence to prevent frost is in their bulks. An illustration of this fact came under my observation at the time of a damaging frost early in May of 1878, that destroyed most of the apples, grapes and berries, and all of the peaches, plums and cherries in all flat open exposures near here, while all of these fruits were a complete success in an enclosure of eight to twelve rods, on which were two two-story and two smaller buildings, with a well filled wood-shed. The influence of these wooden structures to retain heat, extended to a distance of seventy-five feet, as I had ample evidence. The same things happened in a much less degree on the morning of the seventh of May, instant. The success of grapes seems to depend on the amount of summer heat they receive. Isabellas that seldom, and Catawbas that never ripen here in open fields, have come to perfection two years in succession, trained two feet distant from the buildings above mentioned.

QUESTION BOX.

At this juncture the question box was opened and several queries brought out which were answered as follows:

1. What time in the year should evergreens be pruned?

Mr. Whitney.—My practice is to prune any time before the new growth begins in the spring.

Mr. Gulley.—This is perhaps the best season if a great deal of pruning is to be done at any one date; but where one is watching his trees all the time he can prune and pinch and cut off, any time in the year when he sees the trees are growing misshapen.

2. What is the best plan for irrigating strawberries?

Mr. Buell, of Kalamazoo, gave a description of Mr. *Dunkley's plan of irrigation at their village, and remarked that he considered irrigation by the use of a windmill as altogether inadequate for commercial plantations of strawberries.

Mr. Whitney gave his plan of irrigating on a very limited scale with a hose and sprinkler attached to the Muskegon water works. He said sprinkling used but little water, and was very efficacious: He preferred using the water at night.

Mr. Gulley thought this matter of irrigation a very important one because it made one practically independent of rain. At the College they wanted to try something on a small scale, and he was looking for light in the practical management of water for this purpose.

3. When and how may evergreens be transplanted after they begin to grow in the spring?

Mr. Gulley.—Almost any time, with proper care; however, I prefer to plant out evergreens before the new growth begins, as there is less chance to be taken in the operation, and a little carelessness will not be so apt to work damage.

Mr. A. T. Linderman, White Hall.—I have done a great deal of transplanting of evergreens, and with good success. I do not attribute this success to the time of year that I have chosen, because this has varied; but rather to the fact that I never let the sun strike the roots, and when the trees are out of the ground I keep them completely covered over with some kind of a wrapping.

Sec'y Garfield.—Success does not so much depend on the time of year as the character of the day. If one can do his transplanting in a misty or rainy day and ordinary precaution be taken in removal, the chances are all in favor of a satisfactory job. I have transplanted nearly every month in the year with as fair success in August as any other month.

PRACTICAL HINTS IN LAWN MAKING.

Prof. Beal.—For a good lawn the soil must be good and deep and properly graded. Frequent mowing is another requisite. Even a small space nicely kept by the front door will be the most attractive part of a yard. It is even better than trees,—better than flowers. Sow seeds of June grass thickly and nothing else. White clover may come in if the soil is suitable, but I prefer not to encourage white clover. Mow often but not very close. Put on a top dressing every year. The best and cheapest lawn mower by far that I have used is manufactured by Gregg & Co., Trumansburg, N. Y., and called "King of the Lawn." It runs very easily, is simple and light, does excellent work, and is cheap. To start a lawn, sow seed in early spring or in autumn. Do not sow any other thing with this seed. A light sowing of oats, wheat or other crop is only a hindrance to the young grass. Try both ways and any one will be convinced of this. Do not attempt to keep a nice lawn without getting and using a lawn mower. A good lawn is worth all it costs and no home can be truly pleasant and complete without more or less of a well kept lawn.

Prof. Whitney.—I believe in bright lawns. If it be ever so small an one a plot of grass well kept is a valuable accompaniment to the home. It pays to make a lawn well in the first place by creating a deep soil, then if well seeded and the mowing is done in proper seasons there is no doubt but anybody can have a fine lawn. Water is a great thing however in making the turf always

* For detailed description of Dunkley's irrigation see the Secretary's Portfolio in this volume.

green and fresh. I am in favor of lawn mowers, but if one has a good scythe and uses it well his lawn may be kept very fine.

TESTING VARIETIES.

Prof. Beal.—For some years I have given this matter much thought. There are many new varieties of fruits constantly coming up; and a great many that are going under wrong names. Many tests reported are of no value because men are trying different varieties. Unusual care needs to be employed in selecting plants true to name. Those should be tried in at least two sorts of soil in neighborhoods in several portions of the state. The Agricultural College should test many sorts, and is testing quite a variety. There is great difficulty in securing means and help for this. Even to get adequate means to carry on the class of work is still impossible. There are many classes of people to satisfy. We want models of fruits, but they would be of little value till we had a suitable place in which to put them. For horticulture, at the Agricultural College, a better day is drawing near. We are to have a fine room for a museum of vegetable products, in which I trust may be placed many things of interest to horticulturists. Next year I shall have an assistant to help in experiments. I have planted all the land here available for such fruit to pears, tender cherries, and choice plums. We have no good place for an apple orchard. I have a plan which may not work. At the south end of the College farm, over a mile from the buildings, is a piece of land south of two railways. I ask the State Board to give this piece for an apple orchard to be set with many varieties. The piece of land is isolated. It is still a forest all level, and some part of it a swamp. The plan is to sell off this isolated piece and buy an old cleared place on a hill not three miles away. This now seems to be the best way to solve this much vexed question of a good test college orchard. If any friends of pomology can think of a better way, I hope to hear from them.

Secretary Garfield.—I am glad to see that steps have been taken for further testing varieties at the college. It seems to me entirely within the sphere of the college to even take charge of tests of this kind at some distance from the institution. To be sure in one way and another tests are being made by fruit-growers everywhere—but it is in connection with business, and in matters of this sort often result in too much guess work which after being handed out first as an “I think” gets soon to be a statement of a fact and is liable to mislead. What we want is exact statements of facts concerning varieties from some authoritative source, with little opinion mixed up with it, allowing each orchardist to make what he chooses of the statement.

F. A. Gulley said the college had no desirable locality for a test orchard, though there were 600 acres: some was swamp. There was land within two or three miles of the college which could be bought for the purpose if the Legislature would vote the money.

Mr. Johnstone, of the Michigan Farmer, said the subject was a large one and not easily discussed. Every farmer and nurseryman made partial tests in every orchard. Every man who raised fruit was watching the growth and development of the trees, and noting every indication of progress. He thought there was room enough at the College for a test orchard. The College was growing well and healthily. Orchards are grown for their profit. The wisest man is he who has the fewest but the best selected varieties. New varieties must come up before experts. Can any man fix the standard? Who shall do the

testing? The testing should be done here, by this Society and under the rules by which it works.

We could not look for a commercial orchard at that institution; it was not needed. What he understood as needed at the State Agricultural College first and above all, was an orchard of sample trees, where, after growing them so that their merits as to growth, foliage, style of treatment, hardiness, and adaptation to the soil, would be perfectly learned in connection with the climate and peculiar locality, they would serve as a standard of comparison for all other orchards in the several fruit-growing districts of the State and their soils. It has been said here that the Legislature was not liberal enough in its appropriations, but we are not in fairy land here, and we feel certain that a great omniscient institution is not likely to rise up in a single night or a single year, even if the Legislature were to provide all the millions of dollars it would require. The college has grown solidly and surely; it is firmly planted now; its proportions are far grander now than they were twenty or ten years ago. It takes time to render the several departments thoroughly filled up. We have seen the accommodations of the institution enlarged by the erection of new buildings. We have seen the chemical department erected, enlarged, and still further increased. The whole institution, so far as its facilities for agricultural instruction have been needed, has reached in some points all that could be expected since its organization. It is now come to a point where its botanical and pomological facilities may be attended to, and we hope that they too will be well considered, and that the attempts to increase them will not be beyond the necessities of the institution. In watching the progress of the College for the past twenty-two years, we have seen that it loses nothing by bearing in mind the old latin maxim "*festina lente*" of hastening slowly. From its situation it is impossible that it should be the sole arbiter to test, and decide upon the merits of fruit for commerce. A sample orchard with the means it could supply for observation in regard to treatment, and in training skilled pomologists is all that is needed there. Its collections of samples and models, and its records of observation would undoubtedly be made of great service to the orchardists of the country. But for it to undertake to be the sole tester of fruits is an impossibility. The true test is the commercial demand, so far as profit is concerned. Here in this body is the thorough testing place. Here the commercial grower comes to place before us his experience. Here comes the experimenter with his new fruits. Here comes the amateur seeking new and choice varieties; and here come also all the productions from every district and from every soil and range of climate from Cheboygan to Berrien, from Grand Traverse to Monroe, which are originated or have been brought into our State to be judged upon after hearing the experience of all. This is the true place for the *experimentum crucis*, by which we are to be guided in our decisions as to what is worthy and what is unworthy,—as to what should go on lists which are worthy of cultivation for profit or pleasure and what is not. If we are to be a great State, noted for the production and supply of fruit of the highest quality, and this interest is to be sustained as one of the resources of the State for revenue, we must admit that it is the commercial value of what we grow that must be the leading test. A sample orchard may be grown at the College of the very highest value to our fruit interests, better probably there than anywhere, but so far as a test orchard is concerned, every well grown orchard is a test orchard for the soil or locality in which it is grown. Hence it is that we say here is the place, and here the court before which the

qualities of all fruits and all vegetable growths that belong to horticulture and pomology must be decided upon.

Mr. Lilly, of Allegan, said the college was laboring under a good many disadvantages of location, and he thought many were expecting too much of it in the line of testing fruits. How could peaches be tested there when they could scarcely raise trees.

Following this discussion, Mr. Thompson occupied the attention of the convention in a paper on vegetables, the essence of which is given in the report of the Lansing meeting of this year.

The evening session closed with a short, pithy address by Mortimer Whitehead, of New Jersey, who spoke in very complimentary language of Michigan as a fruit state, and our society as a working force in developing the peculiar horticultural capabilities of the state.

Thursday Morning Session.

Mayor Holt was introduced to the convention at the opening of the morning session, and gave the members a cordial invitation to visit his museum, which was accepted, and the time put at eleven o'clock.

The president spoke of a visit which he had made during the morning to the farm of Mr. Charles Culver, in the town of Laketon. He was surprised by the horticultural promises there presented to him.

Mr. S. L. Fuller followed with an account of a trip which he had taken to the farm of H. S. Tyler, our essayist of yesterday, and exhibited a number of specimens, including the Sharpless strawberry, which he had gleaned there.

The following letter was read from Prof. C. D. Lawton, of Van Buren county:

THE RASPBERRY.

I wish that among the topics to be considered the raspberry had been included, as that is much more extensively cultivated about here (Lawton, Van Buren county), than is the strawberry. The black cap varieties are principally raised—mainly the Doolittle and Mammoth Cluster. There are many plantations of these in this vicinity that are already in bearing, and many more have been set out in the last spring. Heretofore the cultivation of this fruit has proved profitable. When the market is judged to be too dull to warrant shipment, the producer dries the fruit at home, reserving it for the winter trade, receiving from 30 to 40 cents per pound dried. Mr. Robert Jones, of Lawton, tells me he sold, last winter, 400 pounds of dried raspberries at 30 cents. He finds that it requires $3\frac{1}{2}$ quarts of fresh berries to produce one pound dried. The experience of other producers here corresponds with his, only varying in amount.

But within a year or two the rust has appeared, and is the occasion of considerable inquiry, alarm and pecuniary loss, since the only remedy thus far presented is to root out and burn the affected plants. Is there any other alternative, any remedy? I wish you would bring the matter up at your meeting and inquire: (1.) What is the cause of the rust in the raspberries? (2.) Is the disease contagious, *i. e.*, will it spread through and affect a whole plantation in which it appears, if left to itself? (3.) How may the disease be prevented, and how eradicated when it appears, *i. e.*, what are the preventives and

what the cures? (4.) Are other varieties than the black cap liable to the disease, *i. e.*, are the Philadelphia, Gregg, etc., subject to its attacks?

Mr. Bitely tells me that he has observed plantations of blackberries which were so affected with rust as to be clearly noticeable at a distance, but which recovered and seemed to have suffered little or no injury. I have seen wild blackberries, particularly the running kinds, having their leaves covered with rust, but this does not seem destructive, while that to which raspberries are liable is. Here is a chance for the practical exercise of the habit of observation suggested under the eighth head of your schedule of topics. Speaking of this topic, the experience which one gathers by his own observations is of the greatest value in fruit growing—without this habit of constantly watching the results of his own labors and those of his neighbors, of noting carefully the conditions of his surrounding and locality—some constant and some ever varying—of soil, temperature, duration and markets, of the kinds and varieties of fruits adapted to those conditions, of the facts pertaining to propagation, cultivation and marketing of fruits, of love to meet and overcome the innumerable insect enemies and diseases to whose attacks, whatever fruits he may undertake to cultivate, will be found liable—without constantly and perseveringly observing and noting every fact applying to his occupation, disappointment and failure are almost certain to crush whatever cheering hopes and bright anticipations he may have formerly entertained.

PRUNING AND GRAFTING.

How to deal with and prevent the destructive tendencies of the cut worm, thrip, borer, codling moth, curculio, blight, rust and yellows, are questions which press upon his attention constantly, and upon which there must be no relaxing of observation and of effort. I have learned a few things about pruning and grafting—which my observation and experience have taught me—which will be of value to me in future, and which possibly might be of use to others.

I commenced setting grafts in thrifty, vigorous apple trees in March, and continued to graft, at intervals, until the last of May, setting mostly Baldwin cions. Those set about April 15th started the last and are growing the most vigorously. I cut my cions in February and put them away in the cellar, setting the butt-ends in a box of moist earth. However, in much of the grafting which I had performed, before the buds had started any appreciable amount, I cut the cions directly from the tree, and the result is entirely satisfactory; except in some cases where I obtained the cions from grafts set the previous year (1878), they had made a vigorous growth, and the wood seemed to be well hardened and suitable; but cions which I have set, taken from these grafts, have nearly all failed to start, and most of them are already withered up; the others, with scarcely an exception—without reference to time of setting—are growing, or promise to grow. So that I conclude that it is not safe to set cions cut from the previous year's grafts.

I raised some cions and grape cuttings from N. Y., which reached me late in the season in a dried-up condition, having been done up in packages without moisture. I buried them in wet sand, and a few days restored their plumpness and put them in the most satisfactory condition for setting. I tried a wax which I made from a recipe sent to me by Prof. Tracy, and which is found in the Pomological Report of 1877. The recipe, as printed, contains an important error in regard to the amount of tallow to be used, the right amount being

one ounce instead of one pound, as printed in the volume. This mixture is especially recommended by Prof. Tracy for curing wounds made in removing large limbs. I used it as a grafting wax, and it proved worthless for this purpose; it worked nicely when put on, the weather being cool, but under the influence of the hot weather, which succeeded, the mixture speedily relaxed and melted away, leaving the stubs exposed, so that I was obliged to re-cover them with a more enduring material. I have found that a wax made of a mixture consisting of 4 lbs. of rosin, 1 lb. tallow and 1 lb. of beeswax, works very satisfactorily; more beeswax is an injury. A wax made of 6 lbs. rosin to 1 pt. linseed oil is equally good—using less oil if the weather is warm. My experience in pruning, the past year, is somewhat suggestive. Mr. Parmelee recommends fall or winter pruning, and acting on his suggestion I went into the orchard one pleasant afternoon about the 30th of last November, and pruned a few snow-apple trees which had been grafted the previous spring. I did not prune any more until the following March, during which month I did all the remainder of my pruning. As a result, the trees which I pruned in the fall are nearly dead, while those pruned in the spring in the same manner—of the same age and varieties—evince no signs of injury. Out of upwards of a hundred twelve-year-old grafted trees, those that I trimmed in the fall are the only ones which show signs of having suffered.

So that this experience would seem to lead to the conclusion that it is not best to prune newly grafted trees in the fall or winter, at least in this locality.

Another thing I have observed recently, which is, that it is not best to cut your newly set grape roots back to two buds, unless you dig about them constantly to destroy the cut worms; for the worms will eat out the buds and also cut off the sprouts which start from the root as soon as they appear at the surface. I find the better way is, when the soil is infested with cut worms, to let all the buds remain and all start that can and when the growth is sufficiently hardened to resist the cut worm's attack, remove all except those which you wish to have for canes.

CHOICE APPLES.

I am inclined to regard the Northern Spy and the Red Canada as exceptionally valuable, and not universally so, as is the Baldwin. The former generally does well, and in some locations is enormously productive. Some growers, as Mr. Hathaway of Little Prairie Ronde, find it the most profitable sort, but he does not advise every one to grow it. I am aware that the Red Canada possesses great excellence as a fruit, is perhaps superior in quality to the Baldwin, and in the eastern part of the state is a uniform and great bearer, but according to my observation here, it is not as productive as the Baldwin. The only orchard of this sort in this vicinity that seems to bear satisfactorily, is that of John Haines, in Porter township, which has a number of full grown trees originally brought from Plymouth in this State, but I notice this last spring that some of his neighbors who were grafting their orchards were setting Baldwins, and I asked why they did not set red Canada. Well, they thought the Baldwin more sure and profitable; they felt certain that they were not taking any chances on the Baldwin—like the Concord grape it possesses every one's confidence. No more just decisions in pomology have been made than those which awarded the Greeley prizes to these two fruits as the best for general cultivation.

I notice that the Michigan catalogue makes no mention of the Henrick Sweet. I am familiar with the apple, having seen much of it in Oswego and

Seneca counties, New York, from whence I have obtained cions and set here; the tree is thrifty and productive, and the fruit of good size, striped, an excellent keeping dessert and baking apple, greatly superior to the Tallman Sweet.

I regard the catalogue of fruits authorized by the State Pomological Society as exceedingly valuable, and am surprised that the committee should have been able to render it so accurate and reliable. It is certainly the result of great experience, care and conscientious labor.

REPORT OF THE COMMITTEE ON FRUITS.

To the President and Members of the Michigan State Pomological Society:

Your Committee on fruit congratulate the society upon its excellent exhibition of strawberries, which by general acceptance is a display of the largest number of varieties ever made before this society. We are especially gratified at the efforts made by Messrs. Lyon and Humphrey, and of the Agricultural College, at Lansing, to place before the society for general examination so many different varieties of strawberries.

Mr. J. W. Humphrey, of Michigan Lake Shore Nurseries, at South Haven, exhibits 30 plates of the following varieties of strawberries: Agriculturist, American, Bidwell, Black Defiance, Boyden's No. 30, Captain Jack, Champion, Col. Cheney, Cowing's Seedling, Cumberland Triumph, Damask Beauty, Downer's Prolific, Duncan, Great American, Green Prolific, Glendale, Hudson's No. 10, Jucunda, Kentucky, Late Prolific, Monarch of the West, President Wilder, Russell's Advance, Romeyn, Seneca Chief, Seneca Queen, Springdale, Victoria, and Wilson.

The Agricultural College exhibits a collection of 25 varieties, as follows: Afrique, Black Defiance, Captain Jack, Carolina, Champion, Charles Downing, Cumberland Triumph, Duncan, Emperor, Excelsior, Gen. Sherman, Glendale, Grace, Great American, Hervey Davis, Matilda, Monarch of the West, Russell, Russell's Prolific, Seneca Chief, Seneca Queen, Boyden's No. 30, Star, Sterling, and Walden.

Mr. S. R. Lewis, of Ganges, Michigan, a basket containing very fine specimens of Triomphe de Gand, Wilson, and Seneca Chief.

Mr. Ward, of Benton Harbor, a box of exceedingly fine Jucundas.

Mr. E. Wood, from the farm of S. B. Peck, a box of excellent Monarchs.

Mr. W. A. Brown, of Stevensville, Michigan, a number of specimens illustrating the action of frost upon berries.

Mr. James Pointer, of St. Joseph, a box of Crescent.

A. McDaniels, of Stevensville, Mich., a box of Monarch with green tips, showing the habits of this variety in that locality.

Mr. W. D. Bartholomew, of Lake Harbor, Michigan, two boxes of Wilson and one of Jucunda—both superior specimens.

Win. Culver, of Laketon, a basket containing Monarch, Kentucky, Green Prolific, Wilson, and Col. Cheney, and illustrating the benefits of high culture in hills.

Your committee regret, and are surprised at the meagre and indifferent show of fruit from Muskegon. We find only one variety of strawberry, in two boxes from Muskegon, exhibited by Mr. M. A. Rowley, and marked Col. Cheney.

No specimens of Forest Rose were on exhibition. We find that the Monarch during the present season has produced very different results in dif-

different localities, and the Great American, so far in this State has not proved itself remarkable either in size or quality.

The Crescent is being extensively tried, and reports are conflicting. There is some confusion in names of varieties on exhibition, notably so of the Jucunda, Seneca Queen, Boyden's No. 30, and Duncan.

The committee recommend for trial Bidwell, Black Defiance, Captain Jack, Champion, Cowing's Seedling, Hervey Davis, Marvin, Monarch of the West, Seneca Queen, Shirts, Springdale, Sterling, Windsor, and upon a rich heavy soil, with careful cultivation, Triomphe de Gand and Jucunda.

APPLES.

Mr. H. F. Thomas of Jackson, places on the table a very fine specimen of Golden Russet, also Mann Apple, very perfect and in good keeping; also Wagener, Baldwin, Northern Spy, Grimes' Golden, and Hubbardston.

Mr. H. C. Sherwood, of Lakeview Farm, Watervleit, Mich., presents President Lyon a case containing the following varieties: Roxbury Russet, Baldwin, Ben Davis, Bellflower, Rhode Island Greening, and King. They are superior specimens, and in a good state of preservation.

Mr. Geo. W. Dickinson, of Grand Rapids, has an exhibition of plates of the following varieties of apples: Red Canada, Jonathan, Esopus Spitzenburg, Baldwin, Golden Russet and Rawle's Janet.

Mr. Emmons Buell, of Kalamazoo, exhibits two plates of Chronicle apples, showing the remarkable keeping qualities of that variety.

Mr. H. S. Tyler, of Dalton, exhibits Baldwin apples, which show a very marked influence of stock on graft.

Mr. Whitney and Mr. Snow lay upon the table peach, plum, and currant limbs loaded with green fruit.

GEO. W. BRIDGMAN,
EMMONS BUELL,
H. HOLT,

Committee on Fruit.

REPORT OF THE COMMITTEE ON NEW VARIETIES OF STRAWBERRIES.

To the President and Members of the Michigan State Pomological Society:

Five new seedling strawberries have been placed before the society for consideration and name.

Number one was discovered and is shown here by Mr. Ezekiel J. Shirts, of Shelby, Oceana county, Mich. Mr. Shirts exhibits the bearing vine as well as the fruit in boxes. This variety is of unknown parentage and was discovered in Oceana county six years ago.

The berries shown are large, long, and conical, with long neck, the color is very dark, and flavor remarkably sweet. The fruit stalks are long and the leaf of the plant in form and color resembles the Wilson.

Your committee suggest that this variety be named and hereafter called "The Shirts."

Number two is of Wilson and Jucunda parentage and was raised and brought here by Harry Marvin of Ovid, Clinton county, Mich.

The berries presented are very large and even in size, regular in form, of dark red color and understood to be very late.

Your committee suggest that this variety be named and hereafter called "The Marvin."

Number three is a seedling of the Champion, fertilized by pollen from the Charles Downing, propagated by C. A. Gardner, of Dimondale, Eaton county, Mich.

The berries exhibited are medium and very even in size, of bright scarlet color and very regular in form.

Your committee suggest that this variety be named and hereafter called "The Windsor."

Number Four. Your committee did not consider of sufficient merit to authorize a new name.

Number Five. There was doubt in the minds of your committee as to this being a new and distinct variety of berry, and therefore leave it without suggestion until a further examination can be had.

This committee would not feel authorized to recommend for general cultivation any new berry, though never so fine in appearance, that had been tried only in a single locality,—yet of the three new berries (Shirts, Marvin, and Windsor,) each presents marked and distinct characteristics worthy of preservation, and therefore your committee advise that "The Shirts," "The Marvin," and the "Windsor" strawberry be recommended for a general trial in different localities.

GEO. W. BRIDGMAN,
EMMONS BUELL,
HENRY HOLT,

Committee on Fruit.

Report accepted and adopted, and committee discharged.

The committee on flowers reported that for the exhibition of flowers and plants the society was indebted to Mr. Dutton of Holland, Mrs. Charles Culver of Laketon, Mr. C. L. Whitney of Muskegon, Mr. Thomas Wilde of Berlin, and Henry Baker of Muskegon.

MOTIONS AND RESOLUTIONS.

The committee on resolutions beg leave to submit the following report:

WHEREAS, This June meeting of the Michigan fruit-growers is an established one and meets with great favor with members of the association. We have visited Muskegon during favorable weather; the railroads have provided us with reduced rates; the people of Muskegon have furnished us with a hall for our sessions, and a large number of exhibitors have brought their beautiful fruit and flowers to enliven the meeting and add to the instruction of our people. Many of us have been agreeably entertained by new found friends in this city of "a thousand oaks." In appreciation of all these favors which have added so materially in making this meeting pleasant and successful, we recommend the adoption of the following resolutions:

Resolved, That the thanks of this society be tendered to the Chicago & West Michigan railroad, the Detroit, Grand Haven, and Milwaukee railroad, the Grand Haven and Grand Rapids & Indiana railroads for the liberality in granting excursion rates to delegates in attendance at this June session;

Resolved, That the thanks of this society be tendered to the citizens of Muskegon for their generous hospitality and gratuitous use of a hall for our exhibition; also to the hotel-keepers for their reduction of rates to members;

Resolved, That we thank Hon. H. H. Holt for his invitation to visit his Museum.

SAM'L L. FULLER,
L. A. LILLY,
Committee.

It was decided by motion to ask our executive committee to tender an invi-

tation to the American Pomological Society to hold its biennial session for 1881 in Michigan with our society.

Considerable discussion ensued as to where in the State such meeting could be held successfully, and Mr. Fuller quite forcibly maintained that Grand Rapids would be just the place, provided it was thought fit to honor her with the meeting.

On motion, the President was selected to represent our society at the Rochester meeting of the American Pomological Society, with power to appoint his associates.

The society adjourned.

THE ANNUAL FAIR OF 1879.

THE PREMIUM LIST.

The list of premiums for 1879 did not vary but little from that of the previous year. The changes made all proved for the better, and many who criticised the arrangement of special exhibits of fruits, when first planned, expressed themselves well satisfied with it the present season. The separation of dessert from market fruits in the awarding of premiums, is a good point made, and the fruit catalogue issued by the society materially aided the exhibitors in arranging their collections. It was doubted by some of the exhibitors whether the committees paid enough attention to the rule which restricts them to consider poor varieties as derogatory to the standing of a collection. Still the committees themselves thought in many cases they were as severe in their rulings as the law would warrant.

NOTES ON THE REGISTER OF ENTRIES.

Strenuous efforts were made to secure as large a proportion of entries as possible previous to the fair, with very indifferent success, as not one hundred were numbered before the opening of the fair. This seemed discouraging, but the excuse of the horticulturists was that they could not tell what they had that was fit to carry until it was collected, and they could not collect until just previous to the fair week.

Notwithstanding this unpromising opening, before the date for closing the entries they numbered over 1,500; that is three hundred more than in 1878. The following counties were represented in the list of entries: Berrien, St. Joseph, Branch, Hillsdale, Lenawee, Van Buren, Kalamazoo, Calhoun, Jackson, Washtenaw, Wayne, Allegan, Eaton, Ingham, Livingston, Oakland, Macomb, Ottawa, Kent, Ionia, Clinton, Shiawassee, Genesee, Lapeer, Saginaw, Tuscola, Oceana, Bay, Mason, Manistee and Grand Traverse.

The report of the Superintendent of Fruits will contain details concerning the exhibit of fruits, and the floral department will be written up by the Superintendent of Flowers, both of which reports appear later in this volume.

LIST OF AWARDS MADE BY THE MICHIGAN STATE POMOLOGICAL SOCIETY, AT THE FAIR HELD IN DETROIT SEPT. 15 TO 19, 1879.

The awards in Divisions A, B, C, D, H, and J, were made by a committee consisting of Messrs. H. T. Brooks, Pearl Creek, N. Y., and C. R. Coryell, Jonesville, Michigan. In division E, by Eli Bidelman of Lansing, and E. H. Reynolds of Monroe. In divisions F, G, K, and N, by H. G. Reynolds of Old Mission, F. W. Noble of Detroit, and Thomas Love of St. Joseph. In divi-

sion L, by H. E. Bidwell, Plymouth, and Chas. W. Wilde, Berlin. In division M, by E. F. Guild, East Saginaw, C. W. Robinson, Detroit, and A. G. Gulley, South Haven. In divisions O, P, and Q, by Mrs. O. C. Abel, Wayne, Mrs. S. A. Cady, Wayne, and Mrs. E. F. Guild, East Saginaw. In division R, by A. G. Gulley, South Haven, Chas. W. Garfield, Grand Rapids, and A. A. Olds, Decatur. In divisions T and U, by Wm. Adair, Detroit, Miss F. L. Noble, Detroit, and C. S. Goodhue, Owosso. In divisions V and W, Mr. and Mrs. James Verner, Detroit, and Miss Ida Chilson, Battle Creek.

DIVISION A—GENERAL COLLECTIONS OF FAMILY FRUITS.

There were in this division eight large collections of fruit by societies and granges, and three collections shown by the grower. The fruit was found to be very free from blemishes, and in better shape than ever before at a fair. The localities represented were Oceana county, Van Buren county, Genesee county, Kent county, Ottawa county, Eaton county, and Washtenaw county. The nomenclature was generally very good, South Haven Pomological Society taking the first premium for correct names. The aggregate number of plates in these collections must have been over one thousand. The premiums awarded, as announced by the committees, are as follows:

Class 1. Collection of fruits for family purposes by societies, granges, etc.—First premium, South Haven Pomological Society; second premium, Grand River Valley Horticultural Society; third premium, Lawton Pomological Society; fourth premium, Ottawa Grange No. 30.

Class 2. Collection of fruits for family use by the grower—First premium, J. M. Blowers, Lawrence; second premium, C. A. Sessions, Sammon's Landing; third premium, Charles W. Wilde, Berlin.

DIVISION B—GENERAL COLLECTION OF MARKET FRUITS.

The collections shown in this division were very much smaller than in A, but were very choice and very free from worms. The requirements are that productiveness, suitable size, handling qualities, and succession through the usual season shall be the leading considerations, and because some of those who entered very fine fruit did not look carefully to all these features, the committee were enabled to make their awards with comparative ease.

Class 1. Collection of market fruits by societies, granges, etc.—First premium, Grand River Valley Horticultural Society; second premium, South Haven Pomological Society; third premium, Ottawa Grange No. 30.

Class 2. Collection of market fruits by grower.—First premium, A. A. Olds, Decatur; second premium, Chas. W. Wilde, Berlin.

DIVISION C—SPECIAL EXHIBITS OF APPLES FOR GENERAL PURPOSES.

There were ten entries in the two classes of this division, and in class 1 the display was truly remarkable in that there were so many plates of apples and so few poor ones. H. E. Bidwell carried off the premium on nomenclature.

Class 1. Collection of apples for general purposes by societies, granges, etc.—First premium, H. E. Bidwell, Plymouth; second premium, Grand River Valley Horticultural Society; third premium, Ottawa Grange No. 30; fourth, Doney's Jackson county collection.

Class 2. Collection of twenty-five varieties apples for family purposes by grower—First premium, H. E. Bidwell, Plymouth; second premium J. M. Blowers, Lawrence.

DIVISION D—SPECIAL EXHIBITS MARKET APPLES.

Twenty-two entries in this division, and the competition was very close; particularly was this true in the last class where ten plates competed for the best market apple. The varieties stood Baldwin first, Red Canada second, and Northern Spy third. Last year the same varieties received the premiums but in a different order.

Class 1. Exhibit of 12 varieties market apples by grower—First premium, J. M. Blowers, Lawrence; second premium, H. E. Bidwell, Plymouth; third premium, F. M. Benham, Olivet.

Class 2. Exhibit of six varieties market apples by grower—First premium, H. E. Bidwell, Plymouth; second premium, Chas. W. Wilde, Berlin; third premium, A. A. Olds, Decatur.

Class 3. Single variety of market apple shown by grower—First premium, Baldwin, Chas. W. Wilde, Berlin; second premium, Red Canada, H. E. Bidwell, Plymouth; third premium, Northern Spy, E. J. Shirts, Shelby.

DIVISION E—SPECIAL EXHIBITS OF PEACHES.

The South Haven Pomological Society in class one showed 23 varieties all correctly named. The entries were from Van Buren, Oceana, Washtenaw, Kent, Allegan, Eaton, Kalamazoo, Wayne, and Shiawassee counties, indicating that the peach is not confined to any favored locality in its successful production. The awards were as follows:

Class 1. Exhibit of not less than 12 varieties of peaches for general purposes by societies, granges, etc.—First premium, South Haven Pomological Society; second premium, Grand River Valley Horticultural Society; third premium, Allegan county Pomological Society.

Class 2. Exhibit of 10 varieties of peaches for family purposes by grower—First premium, Edward Swartz, Lisbon; second premium, E. J. Shirts, Shelby; third premium, Joseph Lannin, South Haven.

Class 3. Exhibit of 8 varieties of peaches for market by grower—First premium, Joseph Lannin; second premium, Jas. M. Hill, Ann Arbor; third premium, Edward Swartz, Lisbon.

Class 4. Exhibit of 4 varieties of peaches for market by grower—First premium, L. G. Bragg & Co., Kalamazoo; second premium, Joseph Lannin, South Haven; third premium, Jas. M. Hill, Ann Arbor.

Class 5. Single variety of market peach, shown by grower—First premium, F. M. Benham; second premium, Jas. M. Hill, Ann Arbor.

DIVISION F—SPECIAL EXHIBITS OF PEARS.

Twenty-four entries in this division. The first premium in class 2 was given to a collection free from worms and correctly named, but cards were not placed conspicuously on the plates, which should receive the especial attention of the exhibitor. The exhibitor of this entry evidently had tried hard to accord with the recommendations of the society in the selection of specimens.

The second premium only is given in class 3. The entry taking it was a collection admirably arranged and named, showing a succession, but for worminess and want of fairness in the skin, the committee could not give it first premium.

The remark of the committee in class 5, is that stemless pears are not marketable, and samples should be entirely free from worms to compete.

Class 1. Exhibit of twelve varieties of pears for general purposes by societies, granges, etc.—First premium, F. M. Benham, Olivet; second premium, L. G. Bragg & Co., Kalamazoo; third premium, Oceana and West Michigan Pomological Society.

Class 2. Exhibit of ten varieties of pears for general purposes by grower—First premium, H. B. Chapman, Reading; second premium, L. G. Bragg & Co., Kalamazoo; third premium, Wm. Adair, Detroit.

Class 3. Exhibit of six varieties of pears for market by grower—Second premium, L. G. Bragg & Co., Kalamazoo.

Class 4. Exhibit three varieties of pears for market by grower—First premium, L. G. Bragg & Co., Kalamazoo; second premium, H. W. Doney, Jackson; third premium, F. M. Benham, Olivet.

Class 5. Single variety of market pear shown by grower.—First premium, E. J. Shirts, Shelby.

DIVISION G—SPECIAL EXHIBITS OF PLUMS.

In class 1 there was but one entry, but the committee take pains to say the award is made upon real merit, after carefully considering quality, succession, etc. The varieties shown in this collection were: Lombard, Prince's Yellow Gage, Wild Goose, Prince's Orange Egg, Prince Englebert, Green Gage, Purple Magnum Bonum, Yellow Egg, Imperial Gage, German Prune, Dorr's Favorite, Bleeker's Green Gage, Jefferson, Canada Egg, Coe's Golden Drop, Damson, Washington, Red Magnum Bonum, and three Lombard seedlings.

In class 2 committee found much merit, but each collection defective in succession, and recommend that greater care be given to this matter.

In class 3 the premium was given to a collection having an admirable succession of varieties, as follows: Prince's Yellow Gage, Washington, Yellow Egg, Lombard, Canada Egg, and Damson.

Class 1. Exhibit of twelve or more varieties of plums for general purposes by societies, granges, etc.—First premium, Oceana and West Michigan Pomological Society.

Class 2. Exhibit of ten varieties of plums for dessert and family purposes by grower—Second premium, C. A. Sessions, Sammon's Landing; third premium, E. J. Shirts, Shelby.

Class 3. Exhibit of six varieties of plums for market by grower—First premium, E. J. Shirts, Shelby.

Class 4. Exhibit of three varieties plums for market by grower.—First premium, E. J. Shirts, Shelby; second premium, C. A. Sessions, Sammon's Landing.

Class 5. Single variety of market plum shown by grower—First premium, C. A. Sessions, Sammon's Landing; second premium, Peter Collar, Adrian.

DIVISION H.—SPECIAL EXHIBITS OF GRAPES.

The collection taking first premium in class 1, comprised the following sorts: Concord, Delaware, Ives', Iona, Diana, Hartford, Isabella, Martha, Brighton, Agawam, Salem, Merrimac, Wilder, Kalamazoo, Rebecca, Clinton, and Northern Muscadine.

The best six varieties in class 3 were Concord, Delaware, Ives', Iona, Kalamazoo and Merrimac.

Class 1. Exhibit of 15 or more varieties of native grapes by societies, granges, etc.—First premium, Kalamazoo county, L. G. Bragg & Co.; second

premium, Grand River Valley Horticultural Society; third premium, Monroe collection of W. C. Sterling.

Class 2. Exhibit of 10 varieties of native grapes for dessert and family purposes by grower—First premium, L. G. Bragg & Co., Kalamazoo; second premium, W. C. Sterling, Monroe; third premium, C. F. Goodhue, Owosso.

Class 3. Exhibit of 6 varieties of native grapes for market, by grower—First premium, L. G. Bragg & Co., Kalamazoo; second premium, F. G. Schreiber, Monroe; third premium, W. C. Sterling, Monroe.

Class 4. Exhibit of 3 varieties of native grapes for market, by grower—First premium, F. G. Schreiber, Monroe; second premium, L. G. Bragg Co., Kalamazoo; third premium, W. C. Sterling, Monroe.

Class 5. Single variety of market native grape, shown by grower—First premium, Lady, A. Sigler, Adrian; second premium, Concord, C. W. Robinson, Detroit; third premium, Concord, Henrietta Bruchner, Monroe.

Class 6. Exhibit of five varieties foreign grapes, grown under glass—First premium, A. Sigler, Adrian; second premium, Mrs. J. W. Frisbie, Detroit.

Class 7. Single variety of foreign grape, shown by grower—First premium, Dr. W. Owen, Adrian; second premium, A. Sigler, Adrian.

DIVISION J—APPLES—SINGLE PLATES.

The committee had an arduous work in this division, there being about 450 entries to pass upon. There were 23 plates of Greenings, 22 of Baldwins, 15 of Red Canadas, 17 of Golden Russet, 13 of Roxbury Russets, 13 of Wageners, 24 of Northern Spys, and other varieties in proportion to their prominence.

Early Harvest—First premium, F. M. Benham, Olivet.

Red Astrachan—First premium, E. J. Shirts, Shelby; second premium, C. A. Sessions, Sammons Landing; third premium, L. S. Ellis, Manistee.

Primate—First premium, Charles W. Wilde, Berlin.

Large Yellow Bough—First premium, S. M. Pearsall, Grand Rapids; second premium, E. J. Shirts, Shelby; third premium, H. F. Thomas, Jackson.

Early Joe—First premium, F. M. Benham, Olivet.

Maiden's Blush—First premium, L. G. Bragg & Co., Kalamazoo; second premium, John Thomas, Thomas Station; third premium, R. M. Webster, Armada.

Lowell—First premium, Geo. W. Prescott, Grand Rapids; second premium, J. M. Blowers, Lawrence; third premium, John Thomas, Thomas Station.

Porter—First premium, Peter Collar, Adrian; second premium, J. J. Robinson, Sharon; third premium, E. J. Shirts, Shelby.

Keswick Codling—First premium, F. M. Benham, Olivet.

Twenty Ounce—First premium, H. F. Thomas, Jackson; second premium, L. A. Lilly, Allegan; third premium, H. W. Doney, Jackson.

Chenango Strawberry—First premium, H. F. Thomas, Jackson; second premium, E. J. Shirts, Shelby.

Hawley—First premium, H. F. Thomas, Jackson; second, premium, A. A. Olds, Decatur; third premium, H. E. Bidwell, Plymouth.

Dyer—First premium, F. M. Benham, Olivet.

Blenheim Pippin—First premium, F. M. Benham, Olivet.

Fall Pippin—First premium, E. J. Shirts, Shelby; second premium, F. M. Benham, Olivet; third premium, M. H. Chase, Royal Oak.

Haskell Sweet—First premium, F. M. Benham, Olivet.

Summer Pearmain—First premium, F. M. Benham, Olivet.

Duchess de Oldenburg—First premium, C. A. Sessions, Sammons Landing; second premium, E. J. Shirts, Shelby; third premium, F. M. Benham, Olivet.

Peck's Pleasant—First premium, H. F. Thomas, Jackson; second premium, C. A. Sessions, Sammons Landing; third premium, D. W. Lytle, Lawton.

Rhode Island Greening—First premium, E. J. Shirts, Shelby; second premium, Charles W. Wilde, Berlin; third premium, L. G. Bragg & Co., Kalamazoo.

Baldwin—First premium, L. A. Lilly, Allegan; second premium, M. H. Chase, Royal Oak; third premium, John Thomas, Thomas Station.

Red Canada—First premium, J. M. Blowers, Lawrence; second premium, D. W. Lytle, Lawton; third premium, L. G. Bragg & Co., Kalamazoo.

Golden Russet—First premium, N. H. Bitely, Lawton; second premium, L. A. Lilly, Allegan; third premium, Charles W. Wilde, Berlin.

Roxbury Russet—First premium, J. M. Blowers, Lawrence; second premium, L. A. Lilly, Allegan; third premium, M. H. Chase, Royal Oak.

Wagener—First premium, N. P. Husted, Lowell; second premium, H. F. Thomas, Jackson; third premium, John Thomas, Thomas Station.

Northern Spy—First premium, S. W. Dorr, Manchester; second premium, L. A. Lilly, Allegan; third premium, Chas. W. Wilde, Berlin.

Belmont—First premium, J. M. Blowers, Lawrence; second premium, F. M. Benham, Olivet.

Fameuse—First premium, M. H. Chase, Royal Oak; second premium, C. D. Lawton, Lawton; third premium, C. A. Sessions, Sammons Landing.

Bailey's Sweet—First premium, F. M. Benham, Olivet; second premium, E. J. Shirts, Shelby; third premium, C. A. Sessions, Sammons Landing.

Westfield Seek-no-further—First premium, F. M. Benham, Olivet; second premium, David Geddes, Saginaw city; third premium, E. Warner, Lawton.

Hubbardston Nonsuch—First premium, H. F. Thomas, Jackson.

King of Tompkins County—First premium, F. M. Benham, Olivet; second premium, C. A. Sessions, Sammons Landing; third premium, Wm. Johnson, Manchester.

Yellow Bellflower—First premium, F. M. Benham, Olivet; second premium, E. J. Shirts, Shelby; third premium, J. M. Blowers, Lawrence.

Talman Sweet—First premium, M. H. Chase, Royal Oak; second premium, E. Warner, Lawton; third premium, Charles W. Wilde, Berlin.

Ladies' Sweet—First premium, F. M. Benham, Olivet.

Shiawassee Beauty—First premium, S. S. Bailey, Grand Rapids.

Grimes' Golden—First premium, F. M. Benham, Olivet.

Swaar—First premium, Chas. W. Wilde, Berlin; second premium, F. M. Benham, Olivet.

Esopus Spitzenburg—First premium, A. Bailey, Big Beaver; second premium, F. M. Benham, Olivet; third premium, C. Tieman, Lawton.

Jonathan—First premium, J. M. Blowers, Lawrence; second premium, F. M. Benham, Olivet.

Mann—First premium, H. W. Doney, Jackson; second premium, H. F. Thomas, Jackson.

Oakland Co. Seek-no-further—First premium, H. F. Thomas, Jackson; second premium, A. Bailey, Big Beaver.

Transcendent Crab—First premium, M. H. Chase, Royal Oak; second premium, F. M. Benham, Olivet; third premium, L. S. Ellis, Manistee.

Montreal Beauty—First premium, Geo. Taylor, Kalamazoo; second premium, N. P. Husted, Lowell.

Hyslop—First premium, F. M. Benham, Olivet; second premium, E. J. Shirts, Shelby; third premium, C. A. Sessions, Sammons Landing.

In the class "any other worthy variety." Messrs. Benham, Pearsoll and John Thomas took first premiums, and J. D. Perry, of Bell Branch, a second premium.

DIVISION K—PEARS—SINGLE PLATES.

The committee's recommendation was that only five specimens be placed on a plate, thus removing an excuse for unpleasant comment.

There were 20 entries of Bartletts, 18 of Flemish Beauties, 12 of Louise Bonne De Jerseys, 12 of Sheldons and 11 Duchess. The committee note in case of first award in Flemish Beauty "Perfect in all respects." A large number of plates were excluded because of worms. There were in all 151 entries in this division.

Bartlett—First premium, Philo Parsons, Detroit; second premium, Thomas Smith, Detroit; third premium, S. M. Pearsall, Grand Rapids.

Flemish Beauty—First premium, H. C. Engle, Detroit; second premium, David Geddes, Saginaw City; third premium, H. W. Doney, Jackson.

Buffam—First premium, L. G. Bragg & Co., Kalamazoo; second premium, E. J. Shirts, Shelby.

Seckel—First premium, Philo Parsons, Detroit; second premium, L. G. Bragg & Co., Kalamazoo.

Onondaga—First premium, L. G. Bragg & Co., Kalamazoo; second premium, Thomas Smith, Detroit; third premium, H. B. Chapman, Reading.

White Doyenné—Second premium, L. G. Bragg & Co., Kalamazoo; third premium, Philo Parsons, Detroit.

Beurré d'Anjou—First premium, D. J. Mattock, Toledo; second premium, L. G. Bragg & Co., Kalamazoo; third premium, Philo Parsons, Detroit.

Clapp's Favorite—First premium, E. J. Shirts, Shelby; second premium, C. A. Sessions, Sammons Landing.

Sheldon—First premium, H. W. Doney, Jackson; second premium, Philo Parsons, Detroit; third premium, A. A. Olds, Decatur.

Beurré Bose—First premium, L. G. Bragg & Co., Kalamazoo.

Louise Bonne de Jersey—First premium, Thomas Smith, Detroit; second premium, E. J. Shirts, Shelby; third premium, D. J. Mattock, Toledo.

Duchess d'Angonleme—First premium, D. J. Mattock, Toledo, Ohio; second premium, Wm. Sowersby, Detroit; third premium, Philo Parsons, Detroit.

Beurré Diel—First premium, H. B. Chapman, Reading; second premium, L. G. Bragg & Co., Kalamazoo.

Winter Nélis—First premium, L. G. Bragg & Co., Kalamazoo; second premium, F. M. Benham, Olivet.

Beurré Clairgeau—First premium, L. G. Bragg & Co., Kalamazoo.

Doyenné Boussock—Second premium, F. M. Benham, Olivet.

Stevens' Genesee—First premium, H. B. Chapman, Reading.

Beurré Superfine—Second premium, H. B. Chapman, Reading.

Glout Morceau—Third premium, H. B. Chapman, Reading.

DIVISION L.—PEACHES—SINGLE PLATES.

The entries in this division were not numerous, being less than seventy, but in many cases the committee found great difficulty in rendering a decision from the perfection of the competing plates.

Hale's Early—Second premium, C. A. Sessions, Sammons Landing; third premium, E. J. Shirts, Shelby.

Crawford's Early—First premium, Chauncy Gibbs, Ludington; second premium, L. G. Bragg & Co., Kalamazoo; third premium, S. W. Fowler, Manistee.

Barnard—Second premium, E. J. Shirts, Shelby; third premium, C. A. Sessions, Sammons Landing.

Old Mixon Free—First premium, L. G. Bragg & Co., Kalamazoo; second premium, E. J. Shirts, Shelby.

Crawford's Late—First premium, L. G. Bragg & Co., Kalamazoo; second premium, A. H. Fenton, Grand Rapids; third premium, L. L. Halsted, Lawton.

Hill's Chili—First premium, C. A. Sessions, Sammons Landing; second premium, L. G. Bragg & Co., Kalamazoo; third premium, E. J. Shirts, Shelby.

Grosse Mignonne—First premium, F. M. Benham, Olivet.

Late Red Rare-ripe—First Premium, F. M. Benham, Olivet.

In the class "any other valuable variety," J. Allard of Lawton, took a first and third premium, and Jason Atwell, Lawton, took a second premium.

DIVISION M.—GRAPES—SINGLE PLATES.

Of the 116 entries, 17 were Concord, 11 Delawares, 7 Ionas, 7 Hartford, 8 Martha, 10 Salem, and 9 Wilder, so that in many cases the committee had to tally each bunch in a plate grading its standing, and making an aggregate number for the plate with which to compare the standing of its competitors.

Concord—First premium—M. H. Hughes, Grand Rapids; second premium, C. W. Robinson, Detroit; third premium, Mrs. G. W. Bruchner, Monroe.

Delaware—First premium, N. Chilson, Battle Creek; second premium, C. F. Goodhue, Owosso; third premium, L. G. Bragg & Co., Kalamazoo.

Ives'—First premium, L. G. Bragg & Co., Kalamazoo; second premium, Henrietta Bruchner, Monroe; third premium, W. C. Sterling, Monroe.

Iona—First premium, L. G. Bragg & Co., Kalamazoo; second premium, W. C. Sterling, Monroe; third premium, E. Bradfield, Ada.

Diana—First premium, L. G. Bragg & Co., Kalamazoo.

Hartford Prolific—First premium, C. W. Robinson, Detroit; second premium, W. C. Sterling, Monroe; third premium, Dr. W. Owen, Adrian.

Isabella—First premium, H. C. Markham, Detroit; second premium, L. G. Bragg & Co., Kalamazoo; third premium, W. C. Sterling, Monroe.

Martha—First premium, L. G. Bragg & Co., Kalamazoo; second premium, W. C. Sterling, Monroe; third premium, Peter Hughes, Greenfield.

Açawam—First premium, L. G. Bragg & Co., Kalamazoo; second premium, N. Chilson, Battle Creek; third premium, E. W. Cottrell, Greenfield.

Salem—First premium, L. G. Bragg & Co., Kalamazoo; second premium, Dr. W. Owen, Adrian; third premium, R. S. Jones, Lawton.

Merrimac—First premium, L. G. Bragg & Co., Kalamazoo; second premium, E. W. Cottrell, Greenfield; third premium, W. C. Sterling, Monroe.

Wilder—First premium, L. G. Bragg & Co., Kalamazoo; second premium, A. B. Jones, Lawton.

Kalamazoo—First premium, L. G. Bragg & Co., Kalamazoo.

Catawba—First premium, W. C. Sterling, Monroe.

Isabella—Second premium, L. G. Bragg & Co., Kalamazoo; third premium, L. G. Bragg & Co., Kalamazoo.

DIVISION N—PLUMS—SINGLE PLATES.

The committee recommended that great care be taken to preserve stems, because they are an important aid in determining nomenclature. Of the 107 plates found quite a proportion were incorrectly named, and in some cases the same variety was exhibited under several names, probably a result of the purchase of trees incorrectly named by the growers.

Washington—First premium, C. A. Sessions, Sammons Landing; second premium, E. J. Shirts, Shelby.

Lombard—First premium, Chauncey Gibbs, Ludington; second premium, E. J. Shirts, Shelby.

Yellow Egg—First premium—E. J. Shirts, Shelby.

Coe's Golden Drop—First premium, E. J. Shirts, Shelby.

Smith's Orleans—First premium, C. A. Sessions, Sammons Landing,

Red Magnum Bonum—First premium, Jehiel V. Durham, Ludington; second premium, C. A. Sessions, Sammons Landing.

Prince's Yellow Egg—First premium, L. S. Ellis, Manistee; second premium, E. J. Shirts, Shelby.

Green Gage—First premium, C. A. Sessions, Sammons Landing; second premium, E. J. Shirts, Shelby.

Damson—First premium, Mrs. Sylvester Farmer, Detroit; second premium, C. A. Sessions, Sammons Landing.

Jefferson—First premium, E. J. Shirts, Shelby; second premium, C. A. Sessions, Sammons Landing.

Imperial Gage—First premium, C. A. Sessions, Sammons Landing.

German Prune—First premium, Mrs. Sylvester Farmer, Detroit; second premium, E. J. Shirts, Shelby.

General Hand—First premium, E. J. Shirts, Shelby.

Bleeker's Gage—First premium, C. A. Sessions, Sammons Landing; second premium, E. J. Shirts, Shelby.

Dorr's Favorite—Second premium, E. J. Shirts, Shelby.

Plate Quinces—First premium, E. J. Shirts, Shelby; second premium, L. G. Bragg & Co., Kalamazoo.

DIVISION O.—DRIED FRUITS.

Some dissatisfaction was exhibited by some parties who entered in this division, because outside the collections of domestic and factory fruit came in competition. It perhaps would be wise for the Pomological Society to consider this matter in arranging future premium lists. There were 87 entries competing in this division, nicely shown and prepared.

Collection Dried Fruit by any Process—First premium, F. B. Hoadley, Detroit; second premium, J. B. Sweetland, Pontiac.

Collection Domestic Dried Fruits—First premium, Mrs. A. McClary, Galesburg; second premium, L. C. Lincoln, Greenville.

Dried Apples—First premium, L. C. Lincoln, Greenville; second premium, O. A. Turney, Detroit.

Dried Pears—First premium, L. C. Lincoln, Greenville; second premium, Miss Lillie Gear, Greenville.

Dried Peaches—First premium, L. C. Lincoln, Greenville; second premium, J. B. Sweetland, Pontiac.

Dried Plums—First premium, Mrs. G. W. Prescott, Grand Rapids; second premium, J. B. Sweetland, Pontiac.

Dried Cherries—First premium, Miss Lillie Gear, Greenville; second premium, Mrs. P. V. Aldrich, Armada.

Dried Strawberries—First premium, L. C. Lincoln, Greenville.

Dried Raspberries—First premium, L. C. Lincoln, Greenville; second premium, J. B. Sweetland, Pontiac.

Dried Blackberries—First premium, L. C. Lincoln, Greenville; second premium; Mrs. G. W. Prescott, Grand Rapids.

Dried Whortleberries—First premium, L. C. Lincoln, Greenville.

Dried Currants—First premium, Mrs. P. V. Aldrich, Armada; second premium, Miss Lillie Gear, Greenville.

Dried Elderberries—First premium, L. C. Lincoln, Greenville; second premium, Miss Lillie Gear, Greenville.

Dried Grapes—First premium, Mrs. G. W. Prescott, Grand Rapids; second premium, Miss Lillie Gear, Greenville.

DIVISION P—CANNED AND PICKLED FRUITS.

There were 83 entries in this division, and the competition was so close that the committee, especially on collections, had to spend a great deal of time in getting at a decision, and then a protest was entered by one of the exhibitors, but the executive committee, after hearing both sides and looking at the fruit, sustained the viewing committee.

Collection domestic canned and pickled fruit—First premium, L. C. Lincoln, Greenville; second premium, Mrs. G. W. Prescott, Grand Rapids.

Canned apples—First premium, Mrs. G. W. Prescott, Grand Rapids; second premium, L. C. Lincoln, Greenville.

Canned Pears—First premium, Mrs. W. G. Pungs, Detroit; second premium, Miss Maggie Curry, Detroit.

Canned Peaches—First premium, Miss Maggie Curry, Detroit; second premium, R. M. Webster, Armada.

Canned Plums—First premium, Mrs. G. W. Prescott, Grand Rapids; second premium, R. M. Webster, Armada.

Canned Cherries—First premium, Mrs. G. W. Prescott, Grand Rapids; second premium, L. C. Lincoln, Greenville.

Canned Siberian Crab Apples—First premium, Mrs. G. W. Prescott, Grand Rapids; second premium, L. C. Lincoln, Greenville.

Canned Strawberries—First premium, L. C. Lincoln, Greenville; second premium, Mrs. C. G. Hampton, Detroit.

Canned Raspberries—First premium, L. C. Lincoln, Greenville; second premium, Mrs. C. G. Hampton, Detroit.

Canned Blackberries—First premium, Mrs. G. W. Prescott, Grand Rapids; second premium, L. C. Lincoln, Greenville.

Canned Whortleberries—First premium, Mrs. G. W. Prescott, Grand Rapids; second premium, L. C. Lincoln, Greenville.

Canned Quinces—First premium, Mrs. G. W. Prescott, Grand Rapids.

Canned Gooseberries—Second premium, Mrs. G. W. Prescott, Grand Rapids.

Canned Currants—First premium, Mrs. G. W. Prescott, Grand Rapids; second premium, L. C. Lincoln, Greenville.

Canned Grapes—First premium, L. C. Lincoln, Greenville; second premium, Mrs. P. V. Aldrich, Armada.

Pickled Pears—Mrs. G. W. Prescott, Grand Rapids; second premium, L. C. Lincoln, Greenville.

Pickled Peaches—First premium, Mrs. G. W. Prescott, Grand Rapids; second premium, R. M. Webster, Armada.

Pickled Apples—First premium, Mrs. G. W. Prescott, Grand Rapids; second premium, L. C. Lincoln, Greenville.

DIVISION Q.—PRESERVED FRUITS AND JELLIES.

Collection Preserved Fruits and Jellies—First premium, Mrs. G. W. Prescott, Grand Rapids; second premium, L. C. Lincoln, Greenville.

Cider Apple Sauce—First premium, L. C. Lincoln, Greenville; second premium, R. M. Webster, Armada.

Preserved pears—First premium, Mrs. G. W. Prescott, Grand Rapids; second premium, R. M. Webster, Armada.

Preserved Peaches—First premium, Mrs. G. W. Prescott, Grand Rapids; second premium, L. C. Lincoln, Greenville.

Preserved Plums—First premium, L. C. Lincoln, Greenville; second premium, Mrs. G. W. Prescott, Grand Rapids.

Preserved Cherries—First premium, Mrs. G. W. Prescott, Grand Rapids; second premium, L. C. Lincoln, Greenville.

Preserved Strawberries—First premium, L. C. Lincoln, Greenville; second premium, Mrs. G. W. Prescott, Grand Rapids.

Preserved Raspberries—First premium, L. C. Lincoln, Greenville; second premium, Mrs. G. W. Prescott, Grand Rapids.

Preserved Blackberries—First premium, Mrs. G. W. Prescott, Grand Rapids; second premium, L. C. Lincoln, Greenville.

Preserved Whortleberries—First premium, Mrs. G. W. Prescott, Grand Rapids; second premium, L. C. Lincoln, Greenville.

Preserved Quinces—First premium, Mrs. G. W. Prescott, Grand Rapids.

Preserved Currants—First premium, Mrs. P. V. Aldrich, Armada; second premium, Mrs. G. W. Prescott, Grand Rapids.

Collection of Jellies—First premium, Mrs. G. W. Prescott, Grand Rapids; second premium, L. C. Lincoln, Greenville.

Currant Jelly—First premium, L. G. Bragg & Co., Kalamazoo; second premium, Mrs. G. W. Prescott, Grand Rapids.

Apple Jelly—First premium, L. G. Bragg & Co., Kalamazoo; second premium, Mrs. G. W. Prescott, Grand Rapids.

Siberian Crab Jelly—First premium, H. D. Cutting, Clinton; second premium, Sarah Fletcher, Ann Arbor.

Grape Jelly—First premium, Sarah Fletcher, Ann Arbor; second premium, L. G. Bragg & Co., Kalamazoo.

Raspberry Jelly—First premium, F. T. Hall, Greenfield; second premium, R. M. Webster, Armada.

Blackberry Jelly—First premium, Sarah Fletcher, Ann Arbor; second premium, L. G. Bragg & Co., Kalamazoo.

Plum Jelly—First premium, Sarah Fletcher, Ann Arbor.

Unnamed Jelly—Second premium, Mrs. G. W. Prescott, Grand Rapids.

Quince Jelly—First premium, Mrs. G. W. Prescott, Grand Rapids; second premium, L. G. Bragg & Co., Kalamazoo.

DIVISION R.—NURSERY STOCK.

In the display of nursery stock there was no competition, but the committee found a set of entries made by L. G. Bragg & Co., of Kalamazoo, which would do credit to any establishment. As a whole the stock was well grown and the varieties well selected.

The viewing committee looked over the entire list of varieties with a good deal of care and made the following observations in their report:

In class 1. General collection of nursery stock in variety, we found standard fruit and ornamental stock. The bodies of the apple stock were straight, firm and clean; the peach and cherry trees were not overgrown and still large enough. The pear stock was fair and of good variety, but not so well grown as any other class of stock represented; the plums were good, and the grapevines excellent. We found also two varieties of quince, three of gooseberries, and the most prominent sorts of raspberries, blackberries, currants and strawberries.

In ornamental stock the exhibit was admirable in the more common evergreens and deciduous trees as well as shrubs. There were no novelties or untested species represented. For instance, in shrubs we found specimens of Althea, Flowering Almond, Burning Bush, White and Purple Fringe, a Spirea, Snowball, and Wiegelia.

The committee can simply say that if L. G. Bragg & Co., carry a stock at all comparable to the samples shown, and are particular as nurserymen ought to be in the naming of sorts, none need to be sorry that patronize the nursery. We would like to see on exhibition at our fairs a display of nursery stock from various nurseries in the state, and feel assured that it could be made profitable in the same way that displays of implements are of profit to the exhibitors.

The committee made the following awards:

Largest and finest collection of nursery stock in variety, diploma.

Display of nursery apple stock, properly labelled, life membership.

Collection of budded peach stock, certificate of merit.

DIVISION S.—SCREENS.

The report in this division was deferred for the annual meeting, and will be found on a future page in this volume.

DIVISION T.—PLANTS IN POTS—PROFESSIONAL LIST.

The following is the report of the committee:

The committee on Plants in Pots would say that they have made a careful inspection of the different plants on exhibition and desire to congratulate the society on the steady improvement in the cultivation of exotic plants. In many of the varieties larger and finer specimens are on hand than have been heretofore exhibited. Some difficulty was experienced by the committee from the negligence of exhibitors in placing their cards on the plants exhibited.

We cannot see much propriety in offering premiums for flowering plants that cannot be in blossom during the period of our state fair, such as Camellias,

Azalias, Pelargoniums, etc., which are not considered ornamental except when in bloom.

Collection of Palms—First premium, S. Taplin, Detroit: second premium, John Breitmeyer, Detroit.

Collection Ferns, 6 varieties—First premium, S. Taplin, Detroit.

Collection 6 sorts Caladiums—First premium, S. Taplin, Detroit; second premium, John Breitmeyer, Detroit.

Collection Marantas—First premium, S. Taplin, Detroit.

20 or more Stove and Greenhouse plants—First premium, F. Schneider, Detroit.

Collection Greenhouse Variegated Foliage Plants—First premium, S. Taplin, Detroit: second premium, John Breitmeyer, Detroit.

Three Caladiums—First premium, S. Taplin, Detroit.

Three Dracenas—First premium, S. Taplin, Detroit; second premium, John Breitmeyer, Detroit.

Six Fuchsias—First premium, F. Schneider, Detroit; second premium, John Breitmeyer, Detroit.

Six Coleus—First premium, John Breitmeyer, Detroit.

Single Palm—First premium, S. Taplin, Detroit.

Single Tree Fern—First premium, S. Taplin, Detroit; second premium, John Breitmeyer, Detroit.

Four Azalias—First premium, F. Schneider, Detroit.

Single Caladium—First premium, S. Taplin, Detroit.

Single Dracena—First premium, S. Taplin, Detroit.

Single Foliage Begonia—First premium, F. Schneider, Detroit; second premium, S. Taplin, Detroit.

Single Flowering Begonia—First premium, F. Schneider, Detroit.

Single Alocasia—First premium, S. Taplin, Detroit.

Single Croton—First premium, S. Taplin, Detroit; second premium, John Breitmeyer, Detroit.

Single Agave—First premium, S. Taplin, Detroit; second premium, Geo. Beard, Detroit.

Unnamed Plant—First premium, F. Schneider, Detroit.

Climbing Plant on Trellis—First premium, F. Schneider, Detroit.

DIVISION N.—PLANTS IN POTS—AMATEUR LIST.

20 House Plants in Variety—First premium, Wm. Green, Detroit.

Foliage Begonia—First premium, Wm. Green, Detroit.

Tuberose—Second premium, F. M. Benham, Olivet.

Mimulus—First premium, Geo. F. Crabbe, Detroit.

DIVISION V—CUT FLOWERS AND BEDDING PLANTS.

The committee recommended that in class 3, cut flowers, the words "and best kept during the fair" be stricken out under the present arrangement of committee work.

There were several entries of "specials" in this division which were considered worthy of favorable notice, but no awards made.

Collection 12 Bedding Plants—First premium, Mrs. J. Parton Owen, Adrian.

Display of Cut Flowers—First premium, Sara Fletcher, Ann Arbor: second premium, James Toms, Ann Arbor.

Twelve Verbenas—First premium, James Toms, Ann Arbor; second premium, Mrs. J. Parton Owen, Adrian.

Twelve Dahlias—First premium, Mrs. Philip Morgan, Ann Arbor; second premium, James Toms, Ann Arbor.

Twelve Gladiolus—First premium, Mrs. J. Parton Owen, Adrian.

Twelve Roses—First premium, James Toms, Ann Arbor.

Twelve Asters—First premium, F. M. Benham, Olivet; second premium, James Toms, Ann Arbor.

Twelve pansies—First premium, Chas. W. Wilde, Berlin; second premium, James Toms, Ann Arbor.

Twelve Zinnias—First premium, Mrs. Wm. Prentiss, Windsor; second premium, Mrs. D. B. Richards, Mattawan.

Display Carnations—First premium, James Toms, Ann Arbor.

Display Stocks—First premium, James Toms, Ann Arbor.

Display Balsams—First premium, Geo. F. Crabbe, Detroit; second premium, James Toms, Ann Arbor.

Display Coxcombs—First premium, Geo. F. Crabbe, Detroit; second premium, James Toms, Ann Arbor.

Display Phlox Drummondii—First premium, Chas. W. Wilde, Berlin; second premium, James Toms, Ann Arbor.

Display Antirrhinum—First premium, Clara Peacock, Pontiac; second premium, F. Dieckman, E. Saginaw.

DIVISION W.—BOUQUETS AND FLORAL DESIGNS.

The committee recommended that in preparing future premium lists artificial flowers should be kept separate from natural ones so that they do not come in competition:

Pair Bouquets of flowers—First premium, Mrs. D. B. Richards, Mattawan; second premium, George Beard, Detroit.

Pair Bouquets, Grasses—First premium, Mrs. B. Kellerman, New Buffalo; second premium, Mrs. Wm. Prentiss, Windsor.

Pair Bouquets, everlastings—First premium, Mrs. B. Kellerman, New Buffalo; second premium, Mrs. Wm. Prentiss, Windsor.

Pair Bouquets, Flowers and Grasses—First premium, Mrs. B. Kellerman, New Buffalo; second premium, Mrs. Wm. Prentiss, Windsor.

Pair Vases, with flowers—First premium, George Beard, Detroit.

Design in Flowers, Grasses, etc.—First premium, Mrs. B. Kellerman, New Buffalo; second premium, Mrs. Wm. Prentiss, Windsor.

Fancy Basket Flowers—First premium, Mrs. Seth Smith, Detroit.

Design for Center Table—First premium, John Breitmeyer, Detroit; second premium, Mrs. Wm. Prentiss, Windsor.

Dish of Cut Flowers, arranged—First premium, Mrs. D. B. Richards, Mattawan.

Floral Novelty—First premium, Geo. F. Crabbe, Detroit; second premium, Mrs. Wm. Prentiss, Windsor.

Pair Button-hole Bouquets—First premium, George Beard, Detroit; second premium, Mrs. B. Kellerman, New Buffalo.

DISCRETIONARY PREMIUMS.

A number of discretionary premiums were awarded in the various divisions by the executive committee, subsequent to the completion of the awards by the viewing committees, mostly upon articles not named in the premium list.

MISCELLANEOUS PAPERS.

GRAPE ROT.

From time to time during the latter part of 1878, and during the summer of the present year, the secretary had numbers of letters inquiring about a disease of the grape that began with a little black speck upon the berry, and very soon spread over entire bunches, oftentimes to the whole crop of a vine, and occasionally to the entire product of a vineyard. These communications came from the vicinity of Detroit and places along the line of the Michigan Southern railroad as far west as Three Rivers.

Grape rot had been a topic for discussion at gatherings of fruit-growers in adjoining states for a year or more, but when brought up as a question for discussion at our own quarterly sessions, no one seemed to have been troubled with the malady, and hence little or nothing of importance has emanated from these gatherings, save an article by Prof. Cook, which was read in February, 1878, at a meeting in Allegan, in which he enunciated the idea that there was some probability in the theory that the prevalence of grape rot and phylloxera bear some relationship to each other. In the west, center and north of this state, there has been no indication of grape rot save that which results from punctures of the curculio.

Under the supposition, however, that the disease was liable to spread over the entire vineyard interest of the state, and feeling that as much information as possible should be gathered in preparation for this event, the secretary despatched the following circular to above twenty pomologists in and out of the state, who might be supposed to have had some experience with the disease.

MICH. STATE POM'L SOCIETY,
SECRETARY'S OFFICE, GRAND RAPIDS, }
August 16, 1879.

My Dear Sir: I am anxious to secure a pretty full account of the grape-rot in Michigan and adjoining states, as well as the opinions of prominent horticulturalists concerning the disease.

Will you be so kind as to write me quite fully any facts about the malady that may have come under your observation; also your opinion as to the cause of and the most promising methods of combating the disease.

Please suggest the best means of ascertaining further facts upon the subject and give me the privilege of publishing your reply in my volume for 1879. I would like an answer by September.

Yours truly,

CHAS. W. GARFIELD.

A majority of the replies simply made the statement that the authors were unacquainted with the disease or its effects beyond newspaper articles that had come under their observation. A few, however, contained valuable information, and these are appended herewith:

SUGGESTIONS AS TO INVESTIGATION.

Charles A. Green, of Clifton, New York, writes: Your favor has my attention, but I can help you but little, as we have been lucky enough thus far to escape the grape rot. We have all the prominent old and new varieties growing free from any trouble except phylloxera in the root, and this is but trifling. I have read with interest the opinion of Mr. Bateham and others, on grape rot. The theory that it is caused by the unnatural and cramped treatment given is plausible. Roots do not extend nor are they healthy when the vines of vigorous varieties are confined to narrow limits. The theory of peculiar weather and temperature fails, for we have had these eternally. Were phylloxera present at the roots, I should be tempted to charge the rot to them. Were I to investigate the subject closely I should certainly secure the aid of an entomologist, for I cannot now be surprised at any new freak that insects may attempt.

Then again, there are diseases that are new and contagious, and likely at any time to spread among fruits just as there are new disorders in the human family; no one can state their source or remedy. Peach yellows and pear blight or grape rot may all be of this class. Diseases are *certainly* spread by budding, and by various unsuspected methods—winds, insects (the bees), etc.

Grapevines have of late, in many instances, received extravagant dressings of bone-dust, wood ashes, phosphates, etc., dead animals have been buried about their roots; every fancy has been indulged in excessive fertilization and mainly experimental. May it not be that the grape has taken potash or phosphoric acid, or other agents designed to promote growth, in excess, and that the rot is a consequence? My thoughts are not experience, simply suggestive of lines of investigation.

EXPERIENCE AT MIDDLE BASS ISLAND.

Mr. G. M. High, of Middle Bass, Ohio, writes:

No one can be more anxious for facts in regard to grape rot, cause, remedy, and cure than myself. I have experimented some during the last year. I first received from Geo. B. Forrester, of New York city, what he supposed was a sure cure; gave it a thorough trial according to directions, without producing the least effect in arresting the disease. I think the mixture was largely composed of sulphate of potash.

I experimented first in applying $1\frac{1}{4}$ lbs. of sulphate of potash, 73 per cent, to each of 200 vines; a mixture of 100 lbs. of potash (same as above) 125 lbs. hen manure, 50 lbs. pure ground bone, and 125 lbs. of land plaster, 2 lbs. to each of 200 vines. To another 200 vines $1\frac{1}{4}$ lb. each of common salt, with two other mixtures, changing the order somewhat. But beyond the mixture containing hen manure I saw no marked difference the first season, and that only in increase of foliage. This year I can see a slight increase of foliage and strength of vine in all the applications. I received last year a lengthy letter from a Mr. Richards of Hiram, Ohio, given "a certain cure" which would be impracticable in extensive culture. I would have given it a trial but overlooked the matter till too late for this season. There are not many but have some theory about the matter that have given the subject any attention whatever.

and of course I have mine, and that is that the rot is an atmospheric difficulty. Black rot never occurs except with low state of barometer and humid atmosphere. Under these conditions, the leaves cannot throw off the secretion coming through the vine—and therefore become stagnant. During this state I have observed that many berries have on them a watery exudation, hardly perceptible to the naked eye. My idea is that fungus spores, that atmospheric condition produces, fasten themselves on these exudations and poison the berries, and produce what we call black rot. Always before becoming black the berries present a greyish mottled appearance. Pure air is the most effectual remedy in my opinion.

We sometimes have the rot a half dozen times during the season. But never unless under the atmospheric state spoken of above. When vineyards are saturated with water, then with showers and hot sun its effect is much worse—and if such weather continues a few days, we are very certain to lose the most of our crops (Catawbas), as Concords, Ives, Delawares, and Iona never have been affected to hurt them much here. If Prof. Cook's theory of phylloxera would hold good we could not grow Iona at all. There is no vine of between 40 and 50 varieties we grow that is so much preyed upon by phylloxera, yet the berries never rot. I was at the Lucas County Agricultural Society meeting last week. The secretary of our state society (Mr. Bateham), advanced the theory that pear blight, potato blight, and grape rot were produced by atmospheric conditions.

Take this season as an instance. But one day we had that peculiar atmospheric state (July 24th), which in our opinion produces rot. Our ground being in a very dry condition, was not good for the propagation of the fungus spores that we believe do the mischief.

The section of country between Sandusky and Cleveland was visited by numerous showers between the 10th and 25th of July. The consequences were, they have lost nearly their entire crop of Concords as well as Catawbas. East of Cleveland it has been quite dry (as with us), and no rot worth mentioning.

Quite a number of vineyardists have contended that Catawbas would not stand 90° of temperature without rotting. The contrary has been proved here this season, for we had the thermometer at 94° to 96° for several days together and no rot,—atmospheric conditions were not right.

I see in the Fruit and Wine Reporter, in speaking of the decline of vine culture in Ohio, that the main cause is an insect sting. We have a rot that Kelley Island vineyardists call "Greeley rot," that we think is caused by an insect, probably the same that Prof. Holmes of your State thought caused the malady. This insect sting gradually works from the point punctured, taking several days before affecting the entire berry. Upon first noticing the sting if it is cut out the berry will heal over, and even if one-third of the berry is black it will do so. With genuine black rot this is never the case. You might say how is it that grapes can be protected by paper bags, as is practiced by Mr. Scarborough and others of Hamilton county, this State? They would be subject to some atmospheric influences. My idea is (it may be crude), that these fungus spores that float through the air do not enter the sacks.

Scientists and amateurs in the business should know more about these things than one in my situation, growing grapes as a matter of bread and butter, and we look to them for a solution of the problem.

IS THE CAUSE IN OVER-CROPPING?

Secretary E. Williams, of the New Jersey Horticultural Society, writes:

I have thought over-cropping, or summer pruning, one or both might have something to do with it.

A gentleman in an adjoining county having a vineyard of Concords, told me this season he was discouraged, as they were then rotting badly the third season in succession. He had given them the best of care, trained and cared for them on the "Fuller system," took pride in it, and had found it profitable till the rot came; now he should give them up. I asked for his theory as to the cause. He had none. I suggested over-cropping. He had thought of the same thing, but was undecided, like myself.

An amateur near me informed me last season that in his examinations of the affected berries he had invariably found a maggot or worm in the seed, but I have dissected a number of berries this season and failed to find anything of the kind.

Twenty to thirty years ago I grew the Isabella as fine as one could with little or no care, and no trouble about ripening. I can not do it now, or could not a few years back with the best care I could give them, so I abandoned them altogether.

My oldest vines now are Concords, planted about twelve years. I can not give the year in which the rot first made its appearance, but it was when I practiced summer pruning, and kept the vines in tolerable condition and well cultivated. But like the gentleman mentioned, I found it poor satisfaction to take so much trouble to grow a crop of rotten grapes, and gave it up. Now the vines get a pretty close pruning in February and absolutely no culture at all. The result is a very fair and satisfactory crop of grapes annually, and very little rot; some little every year in spots,—here and there a vine,—but not enough to be alarming.

A neighbor who does not prune very closely has more rot among his grapes than I do, but I do not assert that it is caused by over-cropping, or that my comparative exemption is due to my "let alone system," for I don't know; but these are the facts, and it will require a series of experiments in this direction to prove whether they have any bearing on the cause of the trouble.

A SHEAF OF EXPERIENCE.

[The following letter is given here for the double purpose, 1st, to show from the magnitude of the business how important it is that it be preserved; 2d, to indicate the benefit which may be derived by thorough use of sulphur.] Mr. Chas. D. K. Townsend, of Isle St. George, writes:

I will be most happy to give you all the facts in my experience of fifteen years in the grape business. It may be of interest to know what we are doing in this group of islands, comprising Put-in-Bay township. The principle grape interest is represented on the three main islands, viz.: Ross, alias South Bass Isle, the largest of the group has 550 acres of vineyard,—393 acres of Catawba, 54 acres of Delaware, 90 acres of Concord, the balance Norton's, Clinton, Ives, etc. The vintage of 1878, on this island, was one million two hundred and thirty-one thousand pounds of grapes. The Put-in-Bay Island wine company built a cellar in 1871, with a storage capacity of 125,000 gallons; in 1878 the company pressed 75,000 gallons of wine. There are several private wine cellars on this island of from 10,000 to 20,000 gallons storage capacity.

Floral Isle, alias Middle Bass Isle, has 415 acres of vineyard, viz., 261 acres of Catawbas, 72 acres Delawares, 61 acres Concord, balance Ives, Nortons, Clintons, etc. Number of pounds gathered in 1878 on this island, one million, three hundred and thirty-eight thousand.

In 1863 Andrew Wehole, Esq., pressed the first wine on New Year's eve; his neighbors called in to sample his wine, and occasionally through the evening repeated the course, when lo! there was left none to sample! The experiment proved a *stimulant*, resulting in all hands going into the culture of the vine, which has grown to vast proportions—above the most sanguine expectations of all parties.

The first barrel sampled is now represented by the pressing of 1878—three hundred thousand gallons. In 1865 Mr. Wehole commenced the manufacture of wine. He pressed 5,000 gallons, in 1870 he built a stone-arched cellar of 30,000 gallons capacity. 1871 Wehole, Week & Son, the new firm, built two brick arched cellars, and up to the present time, 1879, three additional cellars, which gives them storage capacity of over three hundred thousand gallons, and no room to spare. In addition to above, the firm are now having set up two casks of the storage capacity of fifteen thousand gallons each.

Isle St. George, alias North Bass, has 405 acres of vineyard, viz.: 205 of Catawbas, 113 of Delaware, 34 acres Concord, 10 acres Shurtleff's Seedling, the balance Norton's, Clinton. Ives', Iona, Salem, etc. In 1878, one million pounds of grapes gathered. There is a substantial double-arched wine cellar on this island of the storage capacity of 125,000 gallons, owned by the grape growers. Total number of acres of vineyard in Put-in-Bay township, 1,400.

The vine flourishes on this group of islands with unrivalled luxuriance, and even the banks of the Ohio, the first stronghold of the Catawba, have been forced to yield a precedence to its northern rival.

The enemy of the vine most to be dreaded is *mildew*. There are upwards of 200 fungi. *Peronospora viticola*, the American grape mildew, is always found on the under side of the leaf; *uncinula spiralis* or oidium, the *oidium tuckeri*, the European variety, is always found on the upper side of the leaf, and both kinds, American and European, are never found on the same leaf at the same time. The oidium is black, while the American mildew is white. When in blossom, no vineyard can remain in a healthy condition stripped of its foliage, either by mildew, or the detestable practice of summer pruning; just in proportion to the loss of foliage will the vine become weak and a subject of disease.

There are three kinds of rot that destroy the grape, viz.: The gray rot, caused by mildew, which attacks the berry at any time from the blossom well up to maturity; the grape turns a mottled or milky gray color and is lost. The spot rot, as I term it, is caused by the sting of an insect, the wound is so minute as to be difficult to see at first without the use of a glass; the spot turns livid around the injured part, rapidly taking on the appearance of a rotten apple. I have cut out the injured spot or sting, and the berry will heal every time if the operation is performed early; that proves no organic disease. I have not discovered the insect—it works in the night. It has done considerable damage to several vineyards on the east point of Kelley's Island this season,—none on this group of islands to speak of.

The cause of the black rot is still, I believe, an unsolved problem; it is true that hot muggy weather has much to do with it, and you will observe that condition of the weather always develops mildew. I know that any condition that will cause a serious loss of foliage must and does weaken the vine, consequently an

imperfect development of both wood and fruit must follow. I have observed that the black rot invariably accompanies and follows mildew. In my opinion any cause that will impair the vitality of the vine will develop black rot.

The first thing to do then, is to stop the ravages of mildew. How? With the proper application of flowers of sulphur, of course. Friend Carpenter, of Kelley's Island, says "No doubt this will do the work if we know just when to apply it." My answer is to all, *keep it on the vineyard all the time*. When the weather is at all threatening, that is, hot and moist, or when it comes off hot and close, after a rain, the application should be made. The fact is, if one does not keep sulphur present in the vineyard or on the vines all the time, he is sure to be caught. My rule is to sulphur every two weeks, commencing one to five days before the vines come in blossom, and continue through the season into September.

I use the pure flowers of sulphur; the most of the so-called flour sulphur sold in the market is ground brimstone, one may just as well blow sand in his vineyard. I mix the sulphur with land plaster ground extra fine, $\frac{1}{3}$ sulphur to $\frac{2}{3}$ plaster, then apply with a bellows of large size. I can spread sulphur on five acres a day. I do not use the sulphur clear for the reason that the sulphuric acid in the sulphur is injurious to the foliage, the alkali of the plaster neutralizes the acid; the plaster is, also, a benefit to the vine. Sulphur is an enemy to all the insect family; drives away the thrips, which are a great nuisance.

GRAPE VINE CULTURE AND GRAPE ROT.

BY THOMAS TAYLOR, MICROSCOPIST UNITED STATES DEPARTMENT OF AGRICULTURE.

On the 10th of September, 1877, the grape growers of New Jersey, particularly of Vineland, Egg Harbor, and Hammonton, requested the Hon. William G. LeDuc, Commissioner of Agriculture, to send the microscopist of the department to that State to make investigations relating to the cause or causes of grape rot.

In accordance with the instructions from the Commissioner, I proceeded to the above named places and commenced my investigation on the 14th of the same month at Vineland. The vineyards in that locality generally consist of only a few acres. I visited first that of J. E. Smith, Esq., consisting of two acres of Concord's six years old. Mr. Smith stated that the previous year only a few berries rotted on his vines, while in 1877 one-third rotted. I examined a number of the roots of these vines and found them in a bad condition, two-thirds of the fine rootlets were rotting, one-third were fresh and of a white color, but all such were suffering from attacks of phylloxera. The soil is a sandy loam. The vines were trellised on low frames, and unusually closely planted.

I next visited the vineyard of G. T. Ellis, which consisted of about five hundred vines ten years of age. One-half of his grapes rotted. In the last week of June the berries began to rot while yet small and green. The Concord's rotted very badly during the latter part of July. Mr. Ellis stated that rain fell every day during the the whole of the last week of that month, accom-

panied by foggy nights and heavy dews. The roots of these vines were very deep in the ground. I found here a few samples of knotted roots, the result of phylloxera. Soil sandy loam.

The next vineyard visited consisted of six acres of Concords. I observed no phylloxera at the roots. This was the first bearing year, and one-fourth of the berries rotted. The owner of the vineyard informed me that he had experimented with sulphur on the leaves with a view to preventing the rot of the grapes. He had used quite a large quantity of sulphur, being determined, as he stated, to give the experiment full justice. The result was the complete destruction of the foliage of the ten vines so treated, and a large increase in the quantity of grapes rotted over those on the vines which had not been so treated. The leaves at the time of my visit had a scorched appearance, their color being a deep yellow.

The vineyard of John McMahon, Esq., consisting of one thousand vines, all of the Concord variety, which had been planted at different times from 1863 to 1868. In 1871 he had a good crop, his vines producing an average of four-teen pounds each. In 1873 the crop was not a profitable one. In 1876 the buds were injured by frost, and in 1877 four-fifths of the crop rotted. His six-year old vines had many decaying roots. In 1872 Mr. McMahon planted 2,500 vines of Concord; these were loaded with grapes in 1874, but seven-eighths of the crop rotted. A few Champion grapes rotted a little. A few Lady vines were also pointed out, the roots of which were good and none of the grapes rotted. These vines had been bearing two years.

S. H. Sargent, Esq., has two hundred Concord vines planted ten feet apart, and of nine years' growth. He stated that about three feet from the surface of his ground there is a hard-pan bottom which holds water. The surface soil is sandy loam, and has a slight musty odor. From two-thirds to three-fourths of the grapes of these vines rotted. In July, 1877, stable manure and wood ashes were used, but no difference has been observed in the quality. This gentleman had also two hundred Concord vines one year old in bearing, one-third of which rotted this year (1877).

I next examined the vineyard of Mr. Gelson, who had pruned back his vines very severely. They bore in abundance, but none of his grapes ripened. The vines were allowed to bear too much fruit.

Col. Pearsons had at the date of my visit 1,300 grape vines in bearing. These were planted in 1870-71-72 and 1873. His first crop was in 1872, and proved the best, so far as freedom from rot was concerned,—very little of that disease appeared about Vineland that year. His vines were planted in holes dug two feet six inches deep, and the same in diameter. Mr. Pearson's vines consisted of 250 Ives' Seedling, 10 Clinton, and about 1,000 Concord. He has sulphured the Concords every year for the last three years (1875, '76, and '77), and has always found benefit from it, but more in wet seasons than in dry. He has never sulphured the Ives' Seedling, as they have never shown any disposition to rot. His method is to combine air-slacked lime, oyster or other descriptions of lime with flowers of sulphur, in the proportion of one part sulphur to two parts lime. From past experiences he judges half sulphur and half lime to be about the right proportion. When a higher proportion of sulphur is used it burns the foliage during the hot days of summer. In 1877 he used the sulphur compound thoroughly on all vines except Ives' Seedlings after each rain. He sulphured thirteen times, giving it up only when it rained every day in succession. About one-third of his crop of Concords was saved, yielding, as he informed me, about three pounds to the vine.

The value of drainage was clearly exhibited in a case which came under my notice on the estate of Col. Pearson. A plat was laid out several years ago with blackberry vines, through the centre of which, in semicircular form, a small tile drain was made, over which, and agreeing with its configuration was planted a row of blackberry plants. These plants grew thriftily and appeared about double the size of those growing on either side of the drain. The soil is a sandy loam and represents the character of Mr. Pearson's vineyards adjacent. His immediate neighbors lost nearly their whole crop. One vineyard of 500 vines yielded only 149 lbs. of grapes, while another of 900 vines yielded only 90 lbs. We found the phylloxera on the roots of Mr. Pearson's Concord, Clinton, and Ives' Seedling, and he informed me that the manured and unmanured rotted alike, although those manured grew more vigorously.

On the 19th of October, of the same year, I visited Egg Harbor City, and with a committee of practical vine-growers, commenced my investigations. The first vineyard visited was that of Col. Chas. Saalmann, known as "Black Rose Vineyard." He commenced planting about nine years ago, and at various periods since, has planted the following varieties: Norton's Virginia Seedling, Salem, Clarner, Ives', Concord, Martha and Taylor's Bullet. His entire vineyard was planted with great care, the whole being subsoiled two feet six inches deep, a method of culture highly approved by the Germans of this colony; by this method the soil of the vineyard is rendered homogenous. During the present year five acres of Col. Saalmann's vines produced eighteen thousand lbs. of grapes. He considers that he lost by rot one-fourth of his crop: but of the Concord alone he lost one-half. His vines are all trained on poles, and are all fertilized with stable manure every year. A hole is dug say on the north side of the vine about two feet deep and filled to within six inches of the top. Not more than two shovels full of manure are put in the hole. The following year a similar hole is dug on the south side of the vine, and the same process is followed on the west and east sides respectively during the succeeding two years. The object of this method of manuring is to distribute root growth. On making an examination of one of these manure deposits we found it filled with masses of tender rootlets. The surface of the vineyard is kept clear and free from all weeds and grass, and is ploughed each year six inches deep and within six inches of the vine stock. Mr. Saalman does not regard the removal of the surface roots as detrimental to the vines, but he considers a light yearly manuring and cultivation very essential to the production of fruit. The roots of all the varieties of grapes in this vineyard were in good condition.

The rainfalls were not as severe at Egg Harbor City during 1877, as they were at Vineland, in the months of June and July, and the former place suffered less than the latter from rot of the grape.

I next visited the vineyard of Michael Hanselman, which consisted of 3,000 Concord vines. His three-year-old Concorde rotted worse than those four years old. Some of the three-year-old vines which had been manured in 1876, did better than others which had not been thus treated.

Mr. Gustavus Hinckle planted 4,000 vines comprising Catawba, Concord, Ohio, Hartford, Clinton, Franklin, Heribmont, and Maxatany. According to the experience of this gentleman, the Catawba and Heribmont failed to ripen, and the Concord rotted on the vine to a greater extent than any of the other varieties. The Ohio, Clinton and Franklin gave satisfactory results.

Mr. Julius Hincke has twelve acres in all. He commenced planting in 1873. He first planted 2,000 Catawba, all of which failed to ripen their fruit. These he replaced with 2,000 Concord vines covering two acres of ground. He has

also planted four thousand Clarner, two thousand Franklin, and four hundred Clinton. This gentleman states as the result of his experience that moderate manuring and culture diminished the rot of the grape. The Concord grapes of this vineyard rotted more than any of the other varieties.

Messrs. Gruner and Behus planted one-quarter of an acre with Ives' vines, one year old. On the third year three thousand pounds of grapes were obtained; the fourth, five thousand five hundred pounds, and the sixth year, which was 1877, about one-quarter of the crop rotted. This firm had a Concord vine eleven years old which, in former years produced bountifully, but in 1877 its grapes rotted badly. One hundred Martha vines one year old were planted, and gave the third year one thousand and fifty pounds of grapes; loss by grape rot, one-third of the crop.

G. A. Frendenthal has three acres of vines consisting of Ives', Martha, Virginia Seedling, Clarner, and Taylor's Bullet, planted in holes about two feet square for each vine, and about ten feet apart. Of these varieties the Concord and Martha rotted most, and the Concord more than the Martha. The latter is a white seedling of the former. Mr. Frendenthal states that the Concord grape did not rot as much on the yellow sand as on the sandy loam.

The soil at Egg Harbor is mostly gravel or coarse sand, while at Vineland it consisted mostly of sandy loam. Sometimes the grape growers of New Jersey discover at various depths from the surface of the soil a layer of what is known as "hard pan," composed of carbonate of iron and sand, which is impervious to water; it is frequently found necessary to cut through this iron layer to allow the water to drain off from the surface. When water accumulates in hollow, gravelly places after heavy rains, it indicated the presence of a "hard pan" bottom or other impervious substances, the character of which should be ascertained, and if possible a remedy applied. This precaution is particularly necessary with plants of extended root growth such as the grape vine. Roots penetrating standing water will surely ferment and the fruit of the plant will fail to ripen.

From the preceding investigation it will appear evident that the Concord grape suffered more from rot than any of the other varieties mentioned. The cause of this at first sight does not appear evident. While making these investigations I observed in some cases the green grapes of the Concord crack open while hanging on the vine. When such a condition occurs in the absence of mildew and after heavy rains, it would seem reasonable to suppose that the cracking is caused by an abnormal and rapid absorption of moisture, probably by the roots, although late investigations indicate that leaves also do absorb moisture, not functionally, perhaps, as through their stomata or breathing pores, but after the fashion of exosmose and endosmose. All membranes, even those made of rubber, when very thin will under suitable conditions allow water to pass through them, and as the cellular tissue of the leaves of plants is more porous than rubber, I deem it quite probable that moisture from dews and rains will pass through the epidermal cells, although in a much smaller ratio than by the roots.

If it can be shown by any mode that the Concord grape vine absorbs more moisture during excessively wet seasons than any of the other varieties mentioned, the rotting of the grapes under such conditions may be easily accounted for, all other conditions being equal. In grape culture it is not so important to consider the amount of rainfalls during the year as the special time they occur.

A vine which is affected year by year by the fungus known as *Peronospora*

Viticola (the American grape vine fungus), is not to be relied on, and is likely to be short lived. On the first severe attack its foliage will prematurely wither and drop off, and its branches and trunk will fail to ripen their wood. Should an early frost follow, an additional injury is sustained. The following season the same condition may occur, and thus year by year the plant loses its vigor and soon becomes worthless.

The Concord has one special advantage over many other varieties, it is seldom the object of fungus attack. It is for this reason that it frequently yields bountifully when others fail.

The grape rot of 1877 brought ruin to many families in Vineland, while at Egg Harbor City in the state, it did not affect materially the interests of the growers, as there was much less rot in the latter locality. I found many speculations advanced as to the cause of the rot, especially at Vineland. The principal one attributing it wholly to the diffusion of spores of fermenting fungi. It was acknowledged, however, by those who advocate this theory, that very wet and warm climatic conditions were necessary to cause the spores to germinate. According to this theory a very wet season is practically the prime cause of the Concord grapes rotting, and not fungi directly. I observed on the surface of the Concord grapes microscopic prominences, which, when viewed with a suitable power of the microscope, proved to consist of hundreds of pustules,—“Perithecia,”—filled with minute spores. This fungus is known as *Phoma invicola*, and in all advanced cases of rot this fungus will be observed on the surface of the Concord grape, and sometimes on other varieties, especially after very heavy rains. On poorly drained lands my experience leads me to believe that it is a typical grape ferment, and like blue mould, will always be found at work when the pulp is in a favorable condition to foster spore growth. To illustrate, should a piece of bread and cheese be placed in a room at a temperature of 100° charged with spores of common blue mould (*Penicillium glaucum* and *Aspergillus glaucus*), the bread and cheese will dry up and show no sign of blue mould. And this condition of the bread and cheese will remain as long as the high temperature continues to affect them; under the conditions specified, the spores will not germinate, but were the bread and cheese submitted to a lower temperature of say, 60° Fah., and the atmosphere of the room kept moist, the bread and cheese thus exposed, would become quickly covered with blue mould. *Penicillium* on the bread, *Aspergillus* on the cheese, the spores of the respective fungi germinating and becoming microscopic plant forests. The fungi named are peculiar to dead organic matter.

The fungus *Phoma* is represented in the Micrographi's Dictionary as a genus of *Spaeronomi* (*Coniomycetous* fungi), which presents both conidiiferous and acrigerous forms. There are numerous species forming small black or brown pustules upon dead leaves, twigs, etc. *Peronospora viticola* on the other hand is confined in its ravages to living plants.

The fungus known as *Oidium Tuckeri*, so far as our information extends is confined in its destructive work to the European grape vine, *vitis vinifera*, and has probably never been found on American grape vines, *vitis vinifera* being its natural habitat. It is a true parasite on the living vine. It is believed that the application of the flowers of sulphur, when early applied, destroys the fungus. Sulphur has not been used as successfully for the destruction of the fungus on the American vines, as it has been in the case of the European grape fungus, *Oidium Tuckeri*. This fungus is favored in growth by a dry atmosphere. *Peronospora* flourishes best under moisture and moderately high temperature.

INSECTS.

We are frequently asked the question: Is grape rot not caused by insects; I have seen the *Phylloxera vastatrix* at the roots of many of the grape vines in New Jersey, not only in the soil composed of sandy loam, but also in coarse sand, and gravel with a slight admixture of sand. But in some cases where the rot was found in great abundance there was an absence of *Phylloxera*, and again where rot was found in a much smaller degree I found *Phylloxera*. It therefore appeared, so far as my observation extended, that *Phylloxera* had little to do with the rot on this occasion, especially with the rot of the Concord grape.

There is no doubt, however, that the effect of the *phylloxera* at the vine roots is to produce great irritation which in some cases very materially debilitates the plant or vine attacked by it. Indeed all of the vine insect pests are contributory to vine disease more or less, and the only remedy for disease thus caused is the destruction of the insect.

“THRIP.”

There is an insect commonly known as “thrip,” a little hopping insect which infests the under side of the leaves and proves very destructive to them, especially when great protection is afforded it, as by high wooden fences, walls, or houses. Owing to the sucking propensities of this insect the leaves become blanched and have a scorched appearance, and the total destruction of foliage often prematurely occurs in vines thus protected, especially in cities. When we take into account the importance of the leaves in elaborating food for the vine, the effect of their loss upon its bearing powers may be better comprehended.

A plant which remains vigorous until the time of its natural rest occurs, will have stored up in its branches the food necessary for the succeeding year.

An American mycologist in a late paper on the “*Peronospora viticola*” of the American vine, says: “One would naturally suppose that a fungus so common as *Peronospora*, which often is found on every leaf of a vine, would have an injurious effect upon the grape crop. Such however is not the case. The fungus does not attack the grapes themselves, nor does it at least in New England, appear until the first of August, and its withering effect upon the leaves is not very evident before September.

As far as out of door grape culture in the northern States is concerned we are inclined to believe that practically no harm is done by *Peronospora viticola*, but that on the contrary the fungus is really beneficial. Our native vines have a luxuriant growth of leaves, and the danger is that in our short summers the grapes will not be sufficiently exposed to the sun to ripen, but the *Peronospora* arrives with us at a period when the vine has attained its growth for the season, the important point being then to ripen up the grapes which are concealed in the foliage, by shriveling up the leaves. The *Peronospora* enables the sun to reach the grapes without loss to the vine, as is shown by the fact that the vines continue to live on year after year without apparent injury.

An unsuspecting person would be apt to suppose from this statement that the fungus *Peronospora viticola* was a great boon to the grape growers of the New England States, but the growers themselves, who speak from practical experience, tell a very different story; and so also do the scientific horticulturists of New England, as well as those of all other sections of the country. The fact is that out of door grape culture is at a discount in New England for

several reasons, one of which is that the season favorable to ripening is too short, while the growing season is too long.

Peronospora viticola has for many years been recognized by our grape growers as the scourge of the grape vines of this country, and the finer varieties cannot be generally grown on account of their liability to its attack. The Iona, Delaware, Walter, and other such varieties can be profitably cultivated only in a few localities on this account. We have, therefore to be content with such inferior kinds as the Concord, Hartford Prolific, Ives, etc., because of their comparative freedom from the fungus.

The causes by which a grape vine may be enfeebled are so various, the special cause operating in a particular case is often difficult to determine, but a knowledge of the conditions best adapted to successful culture may become known by close and continued investigation. We may not be able to combine all the conditions necessary to profitable grape growing, since we cannot control the elements, or materially improve the soil when it is unsuitable, still with careful cultivation a moderate degree of success is often attained, even under conditions not entirely favorable.

We can fertilize a poor soil, and by drainage improve stiff clays. By a persistent use of night-lamps and tarred paper properly arranged, thrips may be destroyed, and their propagation retarded by securing a free circulation of air among the vines. By pinching leaf buds and thinning out the fruit to a reasonable extent, the latter may be brought to a higher state of development, and a larger growth. Over-bearing will always lower the market value of the product.

Sand, gravel or shale, or rising hilly ground are better adapted for grape culture if well drained, than low, rich or marshy land, or heavy undrained clay, and can be more uniformly relied on to give successful results. Such shelter as will retard or prevent the formation of mildew is highly beneficial, but the climatic conditions seem of the highest importance in grape culture. A mild winter and an early spring with moderate spring rains, followed by a warm dry summer, will generally produce good crops of grapes, even under ordinary soil conditions.

It is the opinion of experienced vineyardists, that the most suitable grape growing regions of the United States will be found in elevated situations, and on hill and mountain slopes above the dew line, provided the general climatic conditions are favorable as regards temperature and moisture. In such situations the composition of the soil is of less consequence than it is on low undrained lands, while in the valleys even with artificial drainage the vine roots are more apt to be subjected to undue root stimulation from continued exposure to damp soil and unsuitable surface water.

Under the latter condition, the vines may grow vigorously through the spring, summer and fall. In fact the continuous tendency to grow to new wood and foliage, is one of the principal causes of the frequent failures to ripen observed in grape culture in lowlands and damp valleys. Artificial moist stimulants applied to the roots after the fruit is well formed, deprives the latter of concentrated food stored up in its branches during the spring and summer, as well as of the previous fall growth of the preceding year, since it will divest the vitality of the vines to the production of new wood. Every one is familiar with the fact that fruit trees which over-bear one year will commonly fail to bear the next season. When the plant or tree is exhausted from over-production it requires a year's rest to recuperate. It is the experience of cran-

berry growers that vines deprived of their foliage by caterpillars fail to produce berries the succeeding year, showing clearly that the normal condition of the vine or tree (as the case may be), in any given year is necessary to the proper development of fruit in the succeeding year, hence it has become the practice of fruit growers to thin the fruit out each year to prevent exhaustion, and the trees thus treated will bear fruit regularly and of better quality, to the manifest advantage of the grower. In view of these facts it is evident that the grape growers of New England who complain of a superabundance of foliage would find it to their advantage to pinch a portion of the leaf buds when such a superabundance is imminent. By this course the sap would be husbanded for the maturity of the fruit, and the foliage sufficiently thinned without depending on the aid of the vine fungus which is always and under all circumstances an injury to the vine and an obstacle to successful grape culture.

For eight years I have been making observations and experiments each season on the native vines growing on the grounds of the Department and on the prominent fungi common to them. One vine in particular has attracted my special attention for experimental purposes, viz.: the Devereux, which is much prized in the Southern States as a wine grape, but very unreliable in this district. During wet seasons it is the first to be affected by *Peronospora viticola*, its most succulent leaves being chiefly attacked. In very dry seasons some of the grape bunches dry up and become shriveled, and on making a microscopic examination of them I have found hundreds of the Perithecia (fruit bearing bodies), of *Phoma invicola* described by Berkeley and Curtis.

During the present season, 1879, a letter was received from Florida containing specimens of grapes of the species *aestivalis* affected by a new fungus undescribed in "Thumen's Fungi of the Grape Vine." I forwarded specimens of this fungus to Prof. Chas. Peck of Albany, Botanist of the State of New York, who writes of it as follows: "I suspect it is a very rare fungus. Its spores are much like those of *Ascochyta Ellisii* "*Thumen*," but a little larger, and its habit differs, as that occurs on spots on the leaf. If it always has such a stroma it would be well to call it *Ascochyta stromatic*, or *Phoma stromatic*, for I am not sure that the spores ooze out as in *Ascochyta*."

This fungus is very destructive to the grape bunches. It sets up fermentation on the leading petioles of the bunches as well as on the petioles of the leaves of the vine. All the vines of our correspondent were destroyed by this new fungus. I have named it according to Prof. Peck, *Phoma stromatic*.

Two new parasites are just announced as having appeared on the grape vine in northern Italy. Dr. Cattaneo describes them as being closely allied to *Phoma invicola*. "The nearly ripe berries shrivel up and become more or less strongly coated with a sweetish granular substance soluble in water. The conceptacles under the epidermis of the berry are unicellular and have a yellowish tint."

From the foregoing investigations and other evidences, I have come to the conclusion that the special cause of the failure of the grape crop of the State of New Jersey and other sections of the United States in 1877 resulted from the heavy rains and night dews which occurred in the months of June and July of that year.

During the present year 1879 the months of June and July have been favored with dryness and moderately high temperature in nearly every section of the country, and we hear of no grape rot from sections of the United States where

these highly favorable climatic conditions have prevailed, while in Europe during the present year an extensive grape rot has prevailed where heavy rains have occurred.

EMBELLISHMENT OF COUNTRY SCHOOL GROUNDS.

At the winter meeting of the society a very suggestive essay upon "The Improvement of Country School Grounds" was presented by W. C. Latta of Mason. The discussion which followed awakened in the Secretary a desire to carry on the discussion farther, and if possible, get at some practical methods of accomplishing some work in the matter. It is a great deal easier to write essays, deliver addresses, and talk fluently in conversation upon this topic than it is to actually grapple with the difficulties to be overcome and carry out some plan that shall really awaken a practical interest in the work on the part of school patrons, that will bear fruit in making places where country children attend school, better than the average farmers' barns.

In travelling over Michigan it is very rare to find a school-house situated upon a larger piece of ground than a quarter of an acre, and it is still more rare to find a single example of neatness and taste in the interior or exterior arrangements.

We pass over the State by highway or railway, and when we find a neighborhood of tasty houses with good outbuildings we know it is a thrifty community, the land is good, and the right kind of farming has made an independent, thrifty people.

Should we by some strange dispensation in our travels pass by a school-house built in good taste, nicely arranged in its appointments, having neat outhouses and a yard deftly planted to trees, shrubs, and vines, with a beautiful lawn as a foundation, we should with reason remark, "this neighborhood takes an interest in education. The people have broad views of what school training should do for their children, and they evidently believe that the richest inheritance they can give their boys and girls is an education acquired under the tuition of pleasant associations as well as good instructors."

But if we judge of the interest that Michigan people have in the best and purest education that can be given their children, by the appearance of the places where the business of giving that education is carried on, what must be our judgment! Can it be doubted that this is a proper gauge to measure by? We judge the tree by what it bears.

We judge the man by the company he keeps. We say that the books one reads are his associates and friends, and have as much to do with the moulding of his character as the people with whom he associates and converses. We say, too, in speaking of the home, that the lives of people are influenced very largely by the surroundings and associations of childhood's home. We believe these to be facts. Why do we not apply them to the places that stand next to our homes in influencing the minds and hearts of children. The children are at school over half their waking hours. They go there for the avowed purpose of learning. They go from homes provided with music, pictures, and all sorts of beautiful things, to a bare, often untidy, unpleasant school-room, and a majority of them don't like to go to school, and their parents wonder why it is their children are so anxious to do everything rather than attend school.

The school-house should be the center of attraction in every country district. It should be a model in its inner arrangements and outward embellishments. We have now to deal more particularly with the latter because these come within the realm of horticulture. In the same way that a museum of specimens is collected for instruction within doors, there should be a collection of trees and plants about the lawn. Pupils should be made familiar with the growth of plants, shrubs, and trees by immediate and constant contact with them at school, and will become especially interested in any that are placed under their care and protection. The idea that the school grounds are simply a romping place is erroneous. There is nearly as much to be learned in the yard as in the house from May until October, and the material brought into the yard should be protected as carefully as maps, charts, globes, etc. indoors.

The first and greatest objection that will be made by the majority to the use of the school yard for purposes of instruction, is that the children must have a place to run and play games without the danger of continually injuring something; they must have fun, and he can not appreciate the necessities of childhood who would so hedge about the sports as to take all the activity from them.

This objection is easily met by the assurance that it is in the power of any teacher of gumption, to originate and assist in maintaining such sports as will in no way conflict with the growing of plants, shrubs, and trees, and even annual flowers in the school-yard. Because boys desire to play "long-ball" or "ante over" is no argument in favor of doing without windows in the school-room. If these games break window lights there must be a substitution of a less objectionable game.

Some one has suggested that the school grounds should be beautifully planted and everything placed in the best of order before the children are allowed there, and when school opens let the mandate go forth that everything in the yard is for purposes of instruction, and must be used as globes and maps are used, and cared for in the same manner.

This is wrong in principle and policy. It were better to begin with bare school-houses and grounds, and let every addition be made by the pupils under the judicious guidance of the teacher. Each scholar should feel an interest and pride in the development of the work, and this state of feeling can only be brought about by having their hands do the work. Just so soon as the pupils appreciate the fact that they are partners in the possession of each added tree or vine, a detective force is at once formed for the preservation of the property. But just so long as the feeling is engendered that the school-house and grounds are district property with no especial responsibility save in a board of trustees, there will be the constant difficulty in maintaining the property in presentable condition.

Again, aside from the use of the appointments of the school yard, as a means of giving instruction in the names and habits of plants, the school premises should be a model for the homes about it, and if proper attention is given to the matter, this will be the case without any endeavor to make it such. The work done in the school yard will be the inducement to work at home, and there is no doubt that in a decade wondrous changes might be worked throughout the country in the ornamentation of exterior houses, if the work could only be started about the school-houses.

It is said that public opinion must be manufactured before anything can be done of worth in the ornamentation of school yards, but may not the work

done by the aid of pupils under the direction of the teacher be the manufacturer of the public opinion?

The expense in ornamenting school grounds should be nothing in cash. The work should be all a donation and the plants and trees should be from the woods near at hand, or from the gardens of the patrons, and the teacher who will not take hold of a work like this as earnestly as the teaching of geography and grammar, lacks an important element which should aid him in securing a certificate. The whole subject is an important one and the secretary saw a field of work for our State Pomological Society to engage in, and to bring the matter to the attention of the public, the following circular letter was sent out to a few leading horticulturists and educators:

MICHIGAN STATE POMOLOGICAL SOCIETY, }
Secretary's Office, Grand Rapids, Aug. 16, 1879. }

MY DEAR SIR,—Will you kindly give me your opinion as to the most feasible method of ornamenting our country school yards,—especially your impression upon the following points:

1. How to fence the yards.
 2. What trees to plant.
 3. Arrangements of plantations.
 4. How to care for and save the trees.
 5. How can flowers be managed.
 6. How can trees, plants, and flowers be made useful in the economy of the school.
- I desire to publish your reply in my annual report for 1879 and will be very grateful for your aid in developing the general subject for the advancement of taste in horticulture. Please reply by September 15th.

Yours faithfully,

CHAS. W. GARFIELD, *Sec'y.*

A majority of the answers received were short, saying the writer had never given any thought to the matter and with no experience declined to venture an opinion.

But a few friends of the idea sent communications of value which are appended beneath as contributions to the volume of 1879 and it is to be hoped that the matter will not drop here but that the suggestions offered may be as seed sown in good ground. If the Michigan State Pomological Society shall in this manner develop an interest in the adornment of our country school premises and suggest methods by which this embellishment shall be utilized in giving instruction to the schools and the people of the school districts it will have opened a field of labor second to none that it has attempted, in importance to the state. The first reply which is appended is from the pen of Prof. W. J. Beal of the State Agricultural College.

PROFESSOR BEAL'S OPINION.

We are accustomed to hear a great deal said in favor of our common schools. They are a favorite theme with the teacher, the minister, the lawyer, the doctor, the enterprising farmer, and especially of all who are candidates for a public office.

In these times, every wide awake American citizen, if he is a true patriot, sees the necessity of educating the voters. It is fortunate for our country that so many of our leaders are striving for the interests of our common schools. But let us not fall back, resting on our reputation. A good name can be maintained only by constant effort. In some of our school districts, if I mistake not, there is getting to be considerable indifference. The people are too conservative. They lack interest and enthusiasm. They entrust the care of their children to unskilled and cheap teachers.

In too many neighborhoods, I may safely say in all of them, there is too little attention paid to the condition of the school-house, both inside and outside as well as to the surroundings.

On children, the good influence of a house and yard which are neat, convenient and in good taste, is too obvious to need any arguments. The bad influence of shabby and ill-designed buildings is equally apparent to every observing person.

The schools in most of our cities and villages have surpassed those in the country in these respects. I have never yet seen a country school house which was a model for convenience, comfort, and beauty. I have got to see the first one with surroundings which come up to my standard of excellence. This is doubtless the experience of all who will read this. In many cases, the house has cost enough, but it is defective in some or in many important particulars. There is seldom any good taste shown in the design of the exterior. The house is copied from another or is designed by an incompetent person. I know this is unpleasant talk, and sounds a good deal like fault finding.

The following is a picture of many of our country school-houses. It is partially taken from an article of mine prepared for the Rural New Yorker:

The house is built on a piece of low land, or rough land, back from the main road, perhaps in the edge of the woods, or more likely away from any trees. There is a little corner of half an acre, or less, cut off from a field. The lot is generally destitute of a fence, which is well enough where domestic animals are not allowed to run in the road. These lots, however, are usually open to the frequent visits of cattle, sheep, and perhaps swine. These animals damage the appearance of the yard, except that some of them keep the grass down. The land is rough and ungraded, just as nature left it, except the removal of all or a part of the trees. The stones are scattered about, if stones are common in the locality; stumps and logs are plentiful unless the country is old.

Toward the rear of the lot are a couple of outbuildings much dilapidated, on account of frequent beatings by sundry stones and sticks thrown by mischievous boys. In the buildings last mentioned one or both the doors are off the hinges, the foundation is defective, allowing the superstructure to tip partially over. Several portions of the main building, especially of the front, are badly damaged by hard usage. In several places scattered over the lot are piles of stove-wood, and numerous sticks are strewn about in great confusion. A mud-puddle is situated near the front door. An old board or two serve to keep the feet partially out of the mud. If we enter the room we shall not be disappointed in finding that the inside corresponds with the outside of the house. In some places the seats are too high or too low; the backs too nearly perpendicular, the seats too narrow, and the desks in all respects too clumsy and inconvenient. The black board is a small one in an inconvenient place. It is poorly made and too high at least, for small children. There are no curtains, or if there are, they are torn, faded and out of order. In some the pupils sit facing the light. The stove is broken and dangerous, as can sometimes be seen by holes burned through the floor. The pipe has been apart and burned holes through the ceiling. The plastering is off in several places and roughly patched up in others. There is no provision for ventilation except by the windows and doors. There are cracks through the floor. The foundation walls are breaking down. Cold draughts of air come up through the floor by which means children sit with cold feet. There are no pictures on the walls, and no sign of ornament anywhere.

In such forlorn quarters, with no sign of ornament inside or out, children

are banished for six hours a day, for several months of the year. Is it a wonder that some of them do not like the school? Is there not a temptation to use the jack-knife, to spill ink, spit on the floor, and to be otherwise disorderly?

My object in making these remarks is to call attention to some remedies. It seems to me we should unite in some plans by which we can induce the officers of our district schools to "fix up" the houses a little. Can we not by united effort induce some rivalry in the different districts? Once well started, it would become fashionable, and fashion rules the world.

The secretary of our State Pomological Society is a graduate of our Agricultural College. He was, at one time, foreman of the horticultural department. He is an enthusiast on this subject of rural improvement. He and I have often talked together about the need of improving the surroundings of our country schools. These schools should be precious to all of us.

There is much at stake in our little school houses. "Agriculture advances with the improved condition of our common schools." We are an agricultural people. As agriculture thrives so thrives our country.

I had for some weeks been thinking of presenting this topic to an educational convention for discussion. I have talked with our state superintendent on the subject. He considers it one of very great importance.

I will now take up the questions in the order named in the circular letter.

Before setting the trees, the surface should be smoothed, not all leveled like a floor. Preserve some of the gentle undulations of surface. Consult a landscape gardener, or employ the man in your vicinity who has shown the best taste in arranging and managing his own place. A few paths may be marked out in the front part of the yard; the rear of the grounds will not need any as they will be given up to play. In some portions of our county, and of other counties also, domestic animals are no longer allowed to run in the highway. Where this is the case, I would omit fences entirely except a neat stout railing about the outside for hitching horses. If animals are allowed to run at large I would build a good plain board fence, nailing the boards well. This should be capped with a two by four scantling well nailed to the posts. If desired the boards can be planed and painted. This can be done with some cheap material of a brown neutral or drab color—never white. The gate may be kept from standing open by a chain and weight. I would plant some trees along the road outside. They may be in rows, but I should rather not have them in rows. To look well in rows the trees must be all of the same variety, same size, and be planted at equal distances from the fence and from each other. If there is an exception to these rules (if there is a small tree or a vacancy), the row is disfigured and the blemish becomes very noticeable. Such vacancies are very likely to occur. If the trees are not planted in rows nor symmetrical groups, a single one will not be missed. There are other reasons for not planting in rows. I would plant the trees around the edges and at the corners of the lot in irregular groups with now and then an isolated tree nearer the house. I would not place a tree near the house, especially on the south or east side. Sunlight is wholesome. As a people we do not get enough of it. About the outbuildings, place groups of evergreens which will eventually hide or nearly conceal them. There must be some place left for play, either in a portion of the yard back of the house or in the road, if the latter is not too narrow or too much traveled. The evergreens in the rear of the house may be a mixture of Norway spruce, Austrian pine, white pine, arbor vitae, hemlock spruce, or almost any other of our common evergreens. In front may be placed two to four or more white pines

which may be trimmed up as they get older. In this way they make a shelter from winds and afford a pleasant shade for children in summer. One or two junipers, common Irish or savin, on some knoll will do; also a Siberian or some other hardy dwarf arbor vitae. Most of the trees may be sugar maples, American (weeping) elms, basswoods (in suitable soils), and tulip trees. Chestnut trees are desirable, as nearly every child has pleasant associations connected with chestnuts. Black ash trees are very handsome and thrive on any rich soil.

To care for the trees properly, the director or teacher, or both, should love trees and understand what they need. They need good soil; they need a cultivated space about them for some six years until they become well established. This space should be *not less than six feet* or eight feet in diameter, as large about small trees as about large ones. A small space will do some good, a large one much more. The easiest way will be to perform the work with a horse and cultivator. There can be nothing really nice and good without some trouble, expense or labor from some body. Trees started as above directed will grow more in six years than neglected trees will in twelve or fifteen years. If neglected they are quite likely to die. Then cultivated trees look better, and we do not have to wait so long to reap the reward of our labors. Except the white pines in front, the trees will hardly need any trimming, though the other evergreens will be benefited by cutting off every year or two, some or all of tips of the limbs, especially the upper ones, the leader and all. Except the pines in front, do not cut off the lower limbs of the evergreens near the trunks. To protect the trees in the road where cattle roam, drive or set three or four stout stakes (never two), about three feet from the tree. These stakes should be six or seven feet high, and on them should be nailed some pieces of boards.

Most of our country schools have one or more long summer vacations. Where this is the case, it will be quite difficult to do much with flowers, especially with annuals. There may be some flowering shrubbery near the evergreens, such as snowballs, lilacs, spiraeas, mock oranges, roses, etc. On brick walls, or on some of the larger trees, may be trained an American ivy.

Annual flowers can be planted out of doors and tended by the teacher, *aided* by the pupils, provided the teacher likes such work and has a taste for it, and has a school for most or all of the summer. This work will be a very profitable part of the school, especially if it is well done. The time at such work will be profitably spent. It will interest all the pupils, and will exert a wholesome influence on all of them, especially if they are all required to contribute some plants or seeds and help take care of the plants.

Teachers who succeed well with plants and flowers can talk to their pupils about them. Every scholar should learn their names, from what country they come, their habits, etc. If the teacher has been properly trained in botany, many useful lessons can be taught the girls and boys. They may be taught to observe the germinating seeds, the appearance of the young plants, how the leaves are arranged and shaped, what insects visit the flowers, how they behave, what they collect, how some are fertilized by these insects. To a cultivated teacher there is no limit to the profitable lessons which may be given to the pupils. Such work will add an interest to school; it will teach the attendants to ornament and improve their homes; it will add a charm to rural life. They will learn to love flowers and plants, and to love the teacher who instructed them.

The next response we use is from the pen of Prof. W. W. Tracy, of Old Mission.

PROFESSOR TRACY'S OPINION.

What is the use of a district school house at nearly every corner? Why do your people tax themselves so heavily to establish and maintain them? The answer comes from the statesman, to make good citizens; from the moralist, to make honest men; from the educator, to make broad-minded, intelligent men. No one who has carefully considered the matter will admit for a moment that the simple storing of the mind with absolute knowledge, constitutes more than a small part of the proper work of the school-room. The language of a college professor in addressing a class about to commence a two years' course in chemistry: "Gentlemen, I shall not try to give you a knowledge of chemistry, but simply to teach you how to acquire and how to use such knowledge," is the true spirit of school-room work, and we have a right to ask a place in it for anything that will make our children broader minded, more intelligent men and women, or prepare them to do better work and get greater good from the incidents of their every-day life. No matter how much we may have ignored it, it is none the less true that we all have an esthetic nature which is capable of development, and God has certainly indicated by the beauty which he has bestowed upon *all* his work that we, made in his image are to use and enjoy this nature in our daily life, and we have no more right to neglect this element in the education of our children than the training of their mental, moral, or physical natures. The Indian child grows up with nothing but a physical training, and looking upon his splendid physique, but dwarfed and undeveloped moral and mental character, we will not admit that the perfection of the first excuses his parents in having neglected the other, but is our sin of any different nature when we allow our children to grow up with no appreciation of the marvellous beauty God has spread all about us? Have not the parents of the man to whom "a yellow cowslip a yellow cowslip is and nothing more," failed in the same way if not to the same degree, as those of the man who knows not how to sign his name? This education, like every other, comes from experience of and contact with the things of which it partakes. The mathematician gains his power by solving difficult problems. The moral character gains strength from overcoming temptation and every effort to develop and increase the beauty of our surroundings makes us more capable of appreciating the beauty that surrounds us. But you say this is the proper work of the home, not of the school-house. Is it any more so than the training of the moral nature? Who would approve of the moral atmosphere of the school-room being no better than that of the worst of the homes from which its children come, or of the teacher who goes into a district where immorality and vice are the rule, and yet makes no effort to train his scholars in a better way? Yet this is just the position of most of our schools in regard to esthetic culture. Our district schools are not better than the worst of the homes about them. Our school yards have not a beautiful thing around them. Our school children never have their attention called to nor are asked to make a single addition to the beautiful things of house or field. Have we not a great work to do in this direction before we reap the full reward of our common school system in rearing up broad-minded, cultured men and women. How to commence this work is a question not easily answered. The German workman enters upon active labor with more schooling than the American, but is far below him in intelligence and ability to use what knowledge he has, and I think this result may be fairly attributed to the fact that the German's education is largely compulsory during an enforced and irksome service in the army, while that of the American is voluntary and gained during the bright

and joyous day of youth. And I think in like way if we are to develop the love for, and appreciation of the beautiful, the training must be voluntary and enjoyable on the part of the child. He must himself plant and care for the trees and flowers. His hand must paint and hang the mottoes, if he is to get the greatest good from them. How he can be induced to do this is a question better answered by men of more experience in educational matters; but it seems to me that a joint effort on the part of the department of education and the officers of the pomological society might develop a system of prizes that would soon change our ugly and unattractive school-rooms and yards into things of beauty that would be a joy forever to those attending them. Certainly the object aimed at is worth the effort.

President Lyon is an old teacher, and in response to the circular he sent the following entertaining letter:

PRESIDENT LYON'S OPINION.

Before proceeding to consider plans and processes for the proper ornamentation of school grounds, we may be allowed to call attention to the purposes for which they are required, and to the space requisite for such purpose. In so doing, we remark that, away from cities and villages, the school house and grounds must afford shelter and accommodation to the teacher and scholars, not only during the hours of school, but to a great extent, during recesses; and since country residences must necessarily often be quite remote from the school, the scholars not unfrequently must require accommodation there, even before and after school hours.

During inclement weather, the building itself must afford the shelter required; but, when the weather will permit, the exuberant spirits of scholars who must, for six hours each day, be confined to the seats of the school room, call for, and should by all means be afforded ample space, in the open air, to enable them to indulge freely in the sports so needful to maintain them in vigorous health, both physical and mental. To properly supply this want, calls for not merely the eighth or quarter of an acre usually appropriated to the purpose; but rather demands grounds ample for such an object, sufficient to save the necessity of appropriating the highway for the purpose, with the alternative of trespassing upon the neighboring fields, to say nothing of the ground required to be planted with trees and shrubbery, as a means of affording shelter or protection from the bleak and inclement winds of autumn, winter and spring. And when we reflect that we are considering the wants of *country* schools, where lands are usually of only moderate cost, we feel it to be quite within reasonable limit, to claim that from two to four or even five acres (depending upon the size of the school), should be provided for the purpose.

The school building should be placed well back from the highway; and the grounds should certainly be, either naturally or artificially, thoroughly drained, while, at the same time, the soil should not be so sandy or porous as to essentially lack compactness. An east or south front should be preferred, so that the entrance shall not be too bleak, even if left fully exposed.

We now come to the consideration of the first query of the secretary.

HOW TO FENCE THE YARDS.

The grounds should certainly be thoroughly isolated from the adjacent lands,—so much so as to avoid, as far as possible, all occasion to trespass upon them. To accomplish this object would require a fence not easily passed; and it may and should at the same time be made to answer as a screen

against unpleasant or improper scrutiny from without. Instead, however, of effecting this object by the construction of a high and tight board fence, we strongly advise the planting on all the sides except the front of an evergreen screen, sufficient, when well grown, to fully hide the view.

Along the front we would plant a low ornamental hedge, either deciduous or evergreen, with the needful passages through it for the accommodation of the grounds and buildings. This should be kept sheared in conical form and of a height not exceeding four or five feet. If cattle are permitted in the street, this must either be a thorn hedge, or be protected by a strong fence with gates or stiles.

WHAT TREES TO PLANT.

For the front, or hedge, in the absence of cattle in the street, plant hemlock, arbor vitae, red cedar, or even privet; or, if required to turn cattle, resort may be had to honey locust or osage orange. For beauty and durability, nothing excels or even equals the hemlock.

For the screen or windbreak on the sides and rear, either hemlock or Norway spruce will prove highly satisfactory.

No trees should be planted so as to permanently shade the buildings; since to do so would render them damp, and therefore more or less deleterious to the health of the inmates.

A portion of the rear, of ample capacity, should be set apart as a play ground; as it would be amply sheltered from bleak winds by the surrounding screens, while it should be open to observation from the windows of the school rooms. It should, as far as practicable, be kept in grass, and all trees and plants should be limited to its borders.

About this play ground, and at the sides and front of the building, the grounds may be devoted to the planting of trees and shrubs; and even annual and perennial flowering plants may be introduced, in cases in which the scholars and teachers can be led to indulge and carry into effect a taste in that direction.

ARRANGEMENT OF PLANTATIONS.

Trees and plants should be selected and grouped in accordance with a carefully considered and matured plan; with care that at the front especially, they shall not, even when fully grown, become dense enough to essentially interfere with a convenient outlook in that direction.

For the purpose of avoiding hasty and inconsiderate action in a matter of such permanent import, and also to avoid as far as possible any tendency to change after such plan shall have taken effect, it should be thoroughly considered by the district board, and should also receive, if possible, the unanimous vote of the people of the district.

There can, however, be little hope of the successful realization of a plan for this purpose, that cannot be made to enlist not only the concurrence, but also the active coöperation of the scholars. We can conceive no more promising means of realizing this than by encouraging each scholar to plant and care for at least one tree or shrub. This could doubtless be more effectively done by allowing each family to arrange and plant a group of trees and plants; each child or scholar to have and care for his own; to be called by his name; and to stand as a memento of him, after he shall have ceased to be a scholar. The selection and grouping of such trees should be left with the families of the

planters, with only such restrictions as shall be judged essential to the unity of the plan, and the success of the undertaking.

HOW TO CARE FOR AND SAVE THE TREES.

The placing of groups in charge of families, with the idea of ownership associated, may be expected to largely secure the needful care and protection. This, however, should be supplemented by a few simple restrictions, carefully devised by the district board and confirmed and established by the people of the district in school meeting assembled.

The district should also have a care in the selection of teachers, that they be made to feel themselves largely depended upon to beget in the minds of scholars an interest as well as a *pride* in such undertaking.

HOW CAN FLOWERS BE MANAGED.

The intelligent and successful management of flowers,—especially annuals, (and we should doubtless add the more delicate, attractive, and beautiful of the biennials and perennials), involves an amount of patient persistence,—a waiting and watching for results, and also a degree of practical acquaintance with horticulture, and the requirements of plant growth, scarcely to be looked for in the very young. Hence, if we except possibly a few of the older scholars, it would seem to be wiser to confine any effort in this direction, mainly, to the planting and care of perennial shrubs and herbaceous plants, including, possibly, a few of the more robust and hardy annuals.

Still the refining and elevating influences of pursuits of this character are so decided and important, that we regard the effort as one well worthy of being made; and in its promotion, we can conceive of no better plan than to allow the scholars to fall, voluntarily, into groups, by families or otherwise,—to assign to the purpose a suitable plat of ground, aside from the general playground, dividing a portion to each group, holding them, as a whole, responsible for the needful care of their portion, but allowing them, at their pleasure, to subdivide among themselves, each planting and caring for his portion. Such an arrangement must, of course, be conducted subject to the needful general restrictions, which could be enforced most naturally by the teacher in case that personage shall prove to be possessed of the requisite taste and ability for the purpose. The required plants and seeds can usually be obtained, collected, or purchased by the scholars if their attention is properly led to the subject at the appropriate season.

HOW CAN TREES, PLANTS, AND FLOWERS BE MADE USEFUL IN THE ECONOMY OF THE SCHOOL?

The utilization of these in the school room must as a matter of necessity rest mainly with the teacher, with whom, almost of necessity, the working out of any experiment of this character must largely rest. Teachers, therefore, should become qualified to give occasional short, simple, non-technical talks upon some of the plants or flowers found in the grounds; and they should also be prepared to point out and explain such peculiarities of growth, inflorescence or fructification as, from economical or other considerations, more or less directly affect their importance or value in the economy of nature; or possibly affect their economic value for culinary, commercial, or other purposes.

The object may doubtless be farther promoted by the encouragement of emulation in the supply and even in the making up or arrangement of bouquets

for the school-room, the church, or other public occasions, not forgetting even the home want.

Such bouquets may, of course, be farther utilized, and that in a manner highly calculated to interest and instruct the makers especially, by using them directly, as a means of illustrating the school-room "talks" hereinbefore spoken of; and they may and should also be used, in the same manner, to add interest to an occasional oral lesson upon some branch of Botany, or other kindred subjects, as, for instance, the peculiar habits of certain plants, the necessities upon which the success of their growth or fructification seems to depend; or even the so slightly recognized, yet important æsthetical bearing which indulgence in their culture is known to exert upon the human mind; and, through it, upon the great and important subject of human civilization and elevation; not forgetting that children, even more readily than older persons, may be led to "look through nature up to nature's God," and in so doing be taught the more fully to comprehend something of the beauty and wonderful fitness of the great system of dependences and compensations under which the great Author of Nature has framed the world in which we all have our existence.

Prof. C. D. Lawton, of Lawton, Van Buren county, kindly sent in a paper in response to the letter of questions.

PROFESSOR LAWTON'S OPINION.

The interest which men manifest in a subject seems, frequently, to be in an inverse ratio to its importance. They readily excite themselves into zeal and passion during a political canvass,—manifesting a degree of interest and excitement that would indicate that their very existence depended upon the success of the particular party to whose fortunes and principles they have given their adherence and advocacy. Only let some party question be started, whether from the halls of Congress or in the town caucus, and every heart is on fire, every tongue is unloosed; time and money are freely consumed in a strife, which is a mere contest of passion, the interest transient, and probably the purpose sought to be accomplished of doubtful utility.

But let it be a question in regard to the education of their children—perhaps to provide a more commodious building with a view to their health, comfort, and convenience—perhaps to engage a more competent instructor,—questions of the deepest utility; and ten to one they will quietly button up their pockets with the utmost unconcern, probably remarking that the old school house is good enough, as good as they had when they were boys, and guess that with a little fixing up it will answer. And then they have no idea of paying some city chap big wages to come in there and teach their children new-fangled notions! Thus let it be a matter fraught with the deepest interests of humanity, one over which reason watches but ambition wakes not, and you will cry in vain for the attention which the importance of your subject should inspire. The ears of the community, so alert for gossip over matters of little concern, are shut, and the zeal that becomes rampant in petty political contests is dead, and the voice of the demagogue, usually clamorous, is suddenly silent and dumb.

But still the world moves in education as in everything else, and with all our perversity we have made considerable progress, if not to the extent that political aspirants, courting popular favor, are wont to boast. We are very apt to endeavor to make up in strains of vaporing bombast for lack of real value and merit. If there is one thing, before all others, which it is our duty and interest to en-

dorse and realize, it should be an intent to educate, not the few, but the children of all the people. And whatever particular sections, communities or individuals may think or do, it is undoubtedly the settled policy of the United States to furnish a common school education to all of its citizens. Our system of government, in fact, is founded upon the presumption that every man is possessed with some degree of education. The progress and perpetuity of free institutions, like ours, imperatively demand that all citizens should be able to avail themselves of the ordinary means of information on all questions pertaining to the public weal. It is only upon the broad foundation of universal education that our political fabric can be perpetuated. It is easier and cheaper to build school houses than prisons; it is better to pay for the school-master to freely educate the children of the poor and ignorant than for the policeman to watch over and arrest them. In fact, that instead of allowing the evils arising from ignorance to accumulate, and then to contend with them as they throng upon every side, it is better to dry up the sources from which they emanate.

The institution in which the interests of all people alike, in this country, should center, is the common school. It surpasses all others in importance, and is the one, which, before all others, we are the most deeply interested in sustaining and promoting. General diffusion of knowledge is a primal necessity in this country; we cannot afford to have ignorance, republicanism is opposed to it, and we must elevate and care for the education of those who are likely to sink into it. Our interests are opposed to the policy which would in any way encourage the formation of privileged classes that should engross all the refinement and intelligence, and leave the poor to sink into that abject and contented ignorance in which poverty is prone to grovel. But in the common school the rich and the poor meet together; there their children should mingle, the rich man's child by being placed on terms of equality and closer intimacy with the children of the rougher members of society, to learn while his mind and sympathies are most susceptible of generous influences, something of the want and of the sufferings of poverty; something of the hardships and discouragements which he, in his fortunate circumstances, may never endure, but through which the poor boy and girl must, purchase, struggle at every step of their rough contest in life; and the poor man's child, by associating with the children of the rich and more refined, to catch some of their embellishments, some of the polish belonging to the higher stations of life. It is the mixture, rather than the exclusiveness of classes and characters that improves our minds and induces in this sometimes jarring world harmony of opinions and actions. This commingling of classes is the essence of republicanism. The school house and its surroundings are among the first objects, in the practical consideration, of common school education, which must, necessarily, occupy the attention. Although our cities and villages generally possess commodious and attractive school edifices, which, unfortunately, not unfrequently indicate an amount of extravagance that is the occasion of onerous municipal financial indebtedness, and in which crude taste, love of display, sham and veneer manifest in the building, are, perchance, but counterparts of the same ignorant qualities which, alas, in too great degree, characterize the system of educational training provided for the children which gather within their walls.

But in the rural districts is the want of enterprise, as manifested in school buildings, and the lack of due appreciation of their educational needs, chiefly apparent. Were it not for the frequency of their occurrence, rendering the object too familiar to longer leave room for surprise, the ambiguous huts,

scattered by the roadside about the country, designed for and used as places of learning, would excite our curiosity and surprise.

Small boxes of buildings, devoid of ornament to add to their attractiveness, constructed as cheaply as possible, and placed close to the highway without any yard or play ground, ornamental or shade trees, perhaps a large mud puddle in front during the wet weather in the fall, affording excellent facilities for wet feet when open, and for cracked heads when frozen over,—they seem contrived, outwardly and inwardly (at least those were emphatically so at which, when a boy, I attended school), to be as unpleasant and forbidding as possible.

The children are crowded together upon uncomfortable seats, the air is close, though not through soundness of the windows, the desks uneasy and covered with the literature which indicates a more frequent use of the jack knife than of pen and pencil, the floor rough, uneven and dirty, the walls showing frequent gaps in the plastering, smoky, uninviting, a place for little but discomfort and torture.

Happily there are numerous exceptions to this picture. But I have several ideals in my mind which are but the counterpart of actual realities, and of which much more might be said in detail, and although there is constantly great improvement, still it may be safely asserted that in nothing which meets the eye in the country, is the want of taste, or the ghost of the dollar more manifestly prominent than in the school houses and in their surroundings.

A great deal is being said nowadays of the necessity of farmers making their homes attractive, with a view to inculcating and stimulating a love of farming and of country life in their children. Keep the boys on the farm is the cry, but when the discerning lad sees not only a disregard of the comforts and amenities of life in his own and in his neighbor's homes, and at the same time is debarred from those advantages of intellectual improvements which are afforded by a pleasant and well conducted school, he certainly cannot be blamed for wanting to escape from such depressing influences and surroundings and seek the towns where opportunities for improvement are common and easy of access. The beautifying of country homes should certainly be stimulated and encouraged, but equally important is it that every country district be provided with a commodious and well furnished school house, rendered still further attractive by ample and pleasant surroundings. We frequently meet with reasonably good school buildings to which the people of the district refer with no small degree of pride, but it is seldom that we find in the surroundings a matter equally deserving of commendation. A farmer who has enterprise and ability to provide a suitable dwelling for himself and family, generally realizes the value of providing a pleasant yard, of surrounding his home with shade trees, with flowers and shrubbery; these are features equally desirable in connection with the school house.

The school house must, of course, be centrally located, for the convenience of all parts of the district. The grounds shall be naturally dry or artificially rendered so, by under drainage, and should be ample in extent; instead of being one-fourth of an acre or at most one half of an acre, as is now generally the custom, the school grounds should comprise two or three acres, the surface of which should be graded to remove inequalities and provide such a contour as shall secure proper surface drainage together with the most pleasing picturesque effect. Along the margin of the adjoining highway strong-growing shade trees should be set out, elms or maples, and secured against injury by cattle, or otherwise, by placing a post upon either side of each tree and connecting them by boards securely nailed to each post upon both sides of the tree. No

pains should be spared to secure good trees with good roots and to properly set them out so as to insure their living and subsequent growth; and if any do not survive, such should be replaced, so that the result shall be fine, thrifty-growing shade trees.

Fences along highways in the country ought not to be necessary; and they are particularly objectionable when enclosing a school yard. They mar the effect, interfere with the children's play, and add a greatly increased expense. If stock is prevented from roaming at large, then there is no necessity for a fence. Their only use is to prevent cattle etc., from running over the school grounds, and injuring the trees, shrubbery, etc. If a fence is deemed essential and must be kept up, the cheapest in the long run, for such purpose, is a post and rail fence, using strong white oak posts, or other good material, such as cedar, chestnut, red elm, etc., sawed six or eight inches square and cut seven feet in length. These should be set square with the line and two and a half feet in the ground and eight feet apart, and connected with sound, strong rails of oak or other suitable wood, sawed about three inches square, and set in the posts diamond shape, *i. e.*, the diagonals of the cross section of the rails should be horizontal and vertical, and set in the posts at equal distance apart, with an auger and mortice, so that they can not turn, three rails to each panel. At the gates may be set two rows of posts,—or the passage-way may be provided with a revolving gate, or even other suitable arrangement may be used to prevent cattle from entering the grounds.

I would surround the lot on all sides with sugar maple or elm trees, set two rods apart, obtaining, in all cases, strong, vigorous trees, and set them out with the utmost care, and mulch them well with coarse manure, spent tan bark, sorghum bagasse, or saw-dust, etc. A suitable space should be reserved at the rear end of the lot for an open play ground. This area might comprise about half an acre, large enough for ball playing and such games, that require ample room. The remainder of the lot, up to the front of the building, I would set to trees, our native forest trees, black walnut, white wood, white elm, maple, butternut, etc., interspersed with evergreens, hemlock, spruce, balsam fir, etc. Avoid setting so that any three trees appear in a row; let them appear to be placed naturally, but be at about equal distances apart, perhaps two rods each from every other. The front yard I would devote to flowers, shrubbery and trees of an ornamental character, such as mountain ash, horse chestnut, etc. The shrubbery may consist of the strong showy sorts such as snowball, lilac, syringia, flowering quince, flowering almond, high bush cranberry, etc.

The flowers may be placed in beds along each side of the walk and elsewhere, as seems most desirable. The success and extent of the flowers will depend very much upon the taste, industry and skill of the teacher in that direction. If the teacher has a love for flowers, a willingness to cultivate them, a pride in their growth and successful development, the pupils, or a considerable portion of them, are sure to become imbued with some degree of eagerness or enthusiasm for the same pastime and to delight in spending their leisure moments in assisting their instructor in this pleasant labor. The thoughtful earnest teacher will obtain a quiet control over their young minds at such times that will be far more effective in the discipline of the school room than innumerable iron-clad rules. The humanizing influence developed by their common care and love for these pure and beautiful objects, will react in a manner to soften the harsher cares and duties of the school-room; they have common ground where their best feelings will freely mingle, and they will thus be drawn together by the law of sympathy. Pupils who frequently spend a few happy moments with

their teacher in caring for plants and flowers, will scarcely regard that teacher as their enemy or as a person whom it is their chief pleasure to annoy and disobey.

Children delight in flowers. They have a natural love for them. It is among the chief pleasures of childhood to lie away to the woods or to the fields and seek for flowers and to return with these beautiful sunbeams which they have gathered and display them for the admiration and approval of their elders. In employing flowers in the home and in the school life, we are simply availing ourselves of one of the better instincts of the child's nature to aid us in endeavoring to properly form his mind and character. The neglect of this influence is in keeping with our unfortunate disregard of many of the nobler facts of our natures, but which if appealed to, strengthened and cultivated, would develop purer lives.

This power of enjoying the beauty of flowers, of appreciating nature in her varied changes, is something beyond the mere universal part of our being, and which it should be early a part of our methods of instruction to draw out and develop. Men may grow to adult life and become, in a degree, not unlike the ox that sees in the plant, however beautiful to the discerning eye it may be, only that which will satisfy the cravings of its stomach; not unlike the ox that sees only in the noblest statue of antiquity a senseless object that obstructs its path, but in which is revealed to the eye capable of discerning it, the sublime idea created in the mind of the sculptor, and wrought by his genius into the lifeless marble which he carved.

I am aware of all that can be said of the difficulty or apparent impossibility of securing all this in our country school grounds. I know the usual condition of country school buildings and grounds,—not unfrequently with the panes broken out of the windows, a panel or two of the front door stove in, the sides cut and marked with rude and obscene representations, the fences broken down, and altogether a general appearance that the riotous and destructive qualities of the occupants have full license and play. But I only reply that if boys are thus allowed to impair and destroy what they should be taught and required to preserve, that they will do it, and that just as easily will they respect and care for these things when it is expected of them and it is made their duty so to do. We find in some villages elegant school buildings furnished with all the appliances for the instruction, comfort, and convenience of the pupils, and the grounds adorned with trees, shrubbery, and flowers. I can cite many such instances that have come under my notice, as the graded school building and grounds at Paw Paw. I remember that in Auburn, N. Y., the grounds in front of the ward school on West Genesee street, one of the finest streets in that beautiful city, were kept in a condition to be one of the most attractive along the street. In some of the other ward schools of the city the reverse was the case. There was no difference in the pupils, but the matter was simply due to the fact that in the one case it was done and in the other it was not.

There is no more difficulty in having pleasant school grounds, beautified and adorned with trees and flowers, in the country than in cities and villages, if the people of the district so determine, and take measures to effect. Let them manifest a desire to secure this result, set out the trees and plants, encourage the children to aid in caring for and in protecting them, by commending all efforts in that direction, and by deprecating all measures adverse to it, and by severely punishing all damages which are viciously done. Instead

of the fence which I have previously described, it would be an improvement upon that plan to surround the grounds with a hedge; osage orange will succeed well, but barberry is more pleasing in appearance, and will require little care when once established.

The trees which are set in the grounds will need little attention save immunity from injury. The children must be made to understand that the trees and plants are not to be injured, and they can be made to do so as well as they can be taught that they are not to go into their neighbors' yards to disturb his trees and flowers without permission. They should be taught that the school house and its grounds are provided by the district for their use and benefit, that they may receive instruction in and cultivate far other qualities than habits of destruction. And this inculcating of habits of care for public property is no small element of value in education in early life.

Of course the people of the district, or a majority of them, must desire the beautifying and improvement of their school grounds and must continue to interest themselves in the matter, and see to it, at their annual meetings, that the necessary means are provided, and that such officers are elected as will carry out measures to secure the desired results; it must be the endeavor to engage teachers who will be attentive to enforce rigidly the rules intended for this purpose, and who may themselves have some degree of skill and liking in this direction. The details of any plan for ornamenting school grounds with trees, shrubbery and flowers, it is not perhaps, further necessary to attempt to indicate, they may easily be supplied, and will vary with the size of the grounds, the means of the district and the number of pupils in it. The great fact to be urged is that the attempt be generally made so that our country schools shall become everywhere places of attraction from the beauty and adornment which they present, and the appearance of utter neglect, which now prevails, shall become the exception. The educational value of such a result would be necessarily great; the harmonizing effect of the association of plants and flowers is generally, in a measure, appreciated; the tendency is to abate and soften the coarser aspects of our natures. By adopting such measures as shall secure the floral adornment of our school grounds, we shall, at a small outlay of trouble and expense, secure an important aid in the better formation of the character of our children.

After all we are to remember that our common schools are the institutions which, in this country, it is our highest interest to foster and scatter over the land. Insignificant though many of them seem to be, adorned by no splendor like the native brooks and rivulets winding among the reeds and rushes, diffused through the land like the veins through the body, many of them objects of little apparent value and almost escaping notice, and yet in their collective influence they are the very life of the nation, the source of its fertility and beauty. Thus emanating from our schools are the influences which perpetually flow out and flow on, and with every wave of their dispersion are distributed for the good of the nation.

Among others to whom the questions were sent, was John J. Thomas, the veteran pomologist and horticultural editor of the *Country Gentleman*. He responded in the characteristic letter which follows:

OPINION OF JOHN J. THOMAS.

In answer to the inquiries for the best modes for ornamenting the yards of country school houses, I shall be unable to devote more than an hour, as ab-

sence from home and other interruptions have deferred my attention to the subject until near the time given for a reply.

There is nothing in rural improvement where a greater need exists. Country school houses are badly neglected. In riding through so prosperous a region of country as some of the best counties of western New York, one may at once select the school houses by the entirely neglected surroundings, and the bleak walls unshaded by a single tree. In one instance, a district school house was seen in a dilapidated condition, its original cost not amounting to five hundred dollars, while two brick barns were within view, each evidently costing five or six thousand dollars. This contrast indicated the relative estimation of the farmers of their horses and their children.

There are several reasons why the surroundings of school houses should be made pleasing in character. Children should not be driven from them by their repulsive appearance. Their early days and early impressions should be connected with the cultivation of landscape taste, which would undoubtedly tend strongly to draw them away from the demoralizing influences of street lounging and of drinking saloons. The lessons thus impressed on young minds in favor of landscape improvement would increase the attractions of rural life and of home influences.

Some years ago I had an opportunity for trying an experiment to induce school-house planting. The trustees of the district school were about to erect a new building on a piece of land which they were to buy of me. They reluctantly consented to my condition, that there should be at least a dozen deciduous trees and as many evergreens planted *and kept in thrifty condition*, at the rear, sides and in front of the house, under the forfeiture of a specified sum. They paid the penalty the first year, and then complied with the conditions. That is now the only district school house in that part of the country that is surrounded with handsome shade trees.

The character of the planting must vary with the character of the people. If they have but little horticultural taste, they must not attempt too much. The school house lot should be an acre at least, and may be simply flanked with few scattered trees and groups. The ground should be seeded to grass, which should be cut with a hand lawn mower at least once a week in the summer season. This will afford a handsome green carpet for the children to tread on, the play ground occupying the rear, so that the lawn in front may not be worn brown by their active feet. A gravel walk may extend to the house in front, provided it can be kept in perfect order, otherwise it should be omitted. Such grounds, neatly kept, would afford a pleasant combination of shade and grass carpet, that could not fail to have a cultivating influence on the developing mind.

Where much horticultural taste exists in the neighborhood, and a teacher can be secured who will carry out this taste, a few circular flower beds properly cut in the grass, and filled with such continued and brilliant bloomers as verbenas, Drummond phlox, geraniums, double zinnias, etc., may be made to give strong attractive charms to the premises. It would add greatly to the preservation of the grounds in good order, as well as to the cultured influence on the young mind, for the scholars to be enlisted in taking care of them and in preserving their neatness and finish. We have seen this method tried with much success on the grounds of a higher seminary, a horticultural society being formed by teachers and students, the former having a general control of the work. In another instance, the teacher of a district school succeeded in the cultivation of annuals about the school house, and a profuse and brilliant

bloom was presented through the season. It is hardly necessary to add that the school itself was conspicuous for the progress made by the pupils in their studies and for the improvement of their character, under this civilizing influence.

In answer to the other inquiries,—the fences for the boundaries should be strong enough to protect the ground from farm animals in neighboring fields, and if an irregular belt of small trees lined the interior they would present an ornamental appearance. The kind of trees to plant and the arrangement is too extensive a subject to treat in these brief remarks, but much may be learned by seeing well laid out and well planted private grounds.

If in addition to what is here suggested, the teacher could give some instruction in the leading principles of botany, illustrated by the trees and plants in sight, and could explain and show something of vegetable physiology in its application to germination and growth, to transplanting, pruning, budding and grafting, and encourage all the experiments practicable, to be performed by the students, useful instruction might be easily imparted which would be valuable through their lives.

A WORD FROM DR. JOHN A. WARDER.

Dr. Warder, in reply to the letter of inquiry, said the subject was one in which he was deeply interested, and one upon which he would like to express his views, but the demands of other associations with which he was connected in an official capacity, were such as to prevent his giving any time to the matter beyond the briefest reply to each of the six questions asked, which are given below:

1. All fences are an abomination. The school lot should be the village or district park, and open.

2. Trees should be adapted to the soil and climate as well as to the space.

3. The plantations should be arranged according to correct principles of landscape gardening.

4. The trees and plants should be treated as if they were living beings that you loved, and desired to make or *teach* others to love them also.

5. Flowers should be treated and presented to the pupils and public upon the same footing as trees.

6. In teaching they should all be employed as exemplars of nature's bounty and beauty, and as evidences of Divine goodness and wisdom, by using them and their several parts as illustrations of forms, of fitness, of design, and generally as means of awakening the infantile and adolescent powers of observation. They should be eye openers, points for comparison, means of awakening thought and ratiocination. Natural objects are among the best educational means.

OPINION FROM THE FLORAL CABINET.

The Ladies' Floral Cabinet for September contains an article with so many good things in it that we are constrained to abstract as follows in this connection:

We have always been advocates of gardens for children; not gardens which they might call theirs, and from which they could gather flowers and fruit only by permission, but such as they could tend and cultivate with their own hands, and the produce of which should be their "very own," so that they might do what they pleased with it. It is in this way that the child will learn to love the work for its own sake, and to teach a child to love nature is to bestow upon

him an inestimable gift which nothing can take away, the cheer of which no calamity can darken, and which will grow more precious as the years go by.

The plan of school-gardens commends itself in every respect to the approval of thinking minds. The cultivation of the soil is the most healthful occupation for children in the world. The open air, the sunshine, in itself the best of medicines, the scent of the upturned earth, are all life-giving, and when to these is added moderate but active exercise, we have the very best prescription for the establishment of a strong constitution.

Doubtless there would be some difficulties about the first establishment of school-gardens, but none that could not speedily be overcome, for "where there is a will there is a way." In our western towns the experiment might be fairly tried, where ground is plenty and new ideas take root as easily as vegetation.

The plat for the garden should be, of course, first thoroughly prepared and laid out before the children are allowed to take part in the work; but they can be taught to plant and to work the ground in a very short time, and it would be easy to excite a spirit of emulation by a system of marks or prizes. The garden might be made of assistance in the study of botany, of chemistry, while the practical knowledge of the work itself would be invaluable.

It is not necessary that the expense should at first be great for plants. Wild-flowers could be sought and transplanted, seeds could often be gathered from the home gardens, and parents would readily contribute to the general stock, while no small benefit of the arrangement would be the turning of the small streams of pocket money into a safe and healthful channel. The children would soon learn to prefer, if their interest were fully aroused, the sweets of the florist to those of the confectioner, greatly to the benefit of their health.

Wherever school-farms have been established in Europe, on quite a large scale, they have been found a success, and why should not gardens be in this country? We hope that the matter will be pushed with vigor, and that before many years have passed every school-house in America will have its school-garden.

In answer to the Secretary's letter of questions, John Swift, a graduate of the Agricultural College, and a very capable landscape gardener, sent the following interesting and suggestive letter:

OPINION OF MR. JOHN SWIFT.

In reply to your kind invitation to give you my views as a landscape gardener upon certain features connected with the ornamenting of country school yards, I may say that my time has been so fully occupied that it has been impossible for me to give such attention to this important and perplexing subject as to justify my writing at length as you so kindly urged me to do in your private letter, and for fear I shall procrastinate to such an extent as to make my article too late for your report if I wait to think up a lengthy article, I have concluded to write briefly, hoping it may be acceptable this time.

Before entering upon the discussion of the several points you mention as desiring particularly to get the opinions of landscape gardeners upon, allow me to speak of the subject as a whole; for upon no subject have I ever given so much thought with so poor results and so little satisfaction as upon this one thing—"The most feasible method of ornamenting our country school yards." First of all it seems too much like planting crops in the wilderness before the forest trees are removed or the fences built to keep out the devouring beasts that roam at large to see what they may destroy. So far as satisfying results

and the general average of locations is concerned, ask a landscape gardener to select such locations as he thinks best suited for the purpose of displaying his skill as an artist, and I am sure that the last of all locations he would select would be the general country school yards as now seen throughout this and our sister States.

Most of them consist of from one-fourth to one-half of an acre of land cut out of some farm lot and fronting the main highway, fenced with a high board or rail fence; school building of the plainest style of architecture situated in the center of this little area with a big wood pile scattered over the ground on the "boys' side," and some old board play house litter, on the "girls' side," and two out-houses of the most dilapidated kind, one in each back corner of said narrow enclosure. This is about the way I find our much lauded institutions of learning throughout the rural districts; and if these are the places you desire ornamented by a landscape gardener, I am sure he will turn away heart-sick and repeat to himself that old saying "Casting your pearls before swine." That there is need enough for improvement in this matter of ornamentation, none can fail to see. That more attention paid to this subject of beautifying the grounds where our little ones spend so many long and too often wearisome days, would bring a rich reward in good temper, good morals, more ennobled views and thoughts; more purity of purpose, and withal, better christianity, can hardly admit of a doubt; but what shall be done to accomplish these desirable results, is the question?

Here are from twenty-five to fifty or more honest old farmers, each of whom has an interest in this country school house; sends his children here to school and perhaps in time past finished his education in this or a worse looking place. Each, of course, has his say about all matters of improvement and outlay of means. Mr. A. lives in a fine tasty house with curved walks and drives up to his door, beautiful trees, shrubs and flowers, arranged in the most pleasing order, scattered around over his well kept lawns, and in winter there is a constant succession of brilliant flowers blooming in the conservatory, all cared for by his equally tasteful wife and daughter, and, as a matter of course, he and his family say, "It's too bad that something is not done to improve the appearance of the district school grounds;" and, perhaps, they set out a few spare trees there, and often the children bring of their abundance a few flowers for the schoolma'am, who is delighted, and all the little ones as well. But just across the road lives Mr. B., and his house is very plain, his barns, other buildings and family, also the same. Not a tree, save a row of dying locusts along the front of his little pinched up front yard which is fenced with a high picket fence to keep the turkeys out, and not a flower to be seen save perhaps a sweet briar, a live-forever, or a snow drop bush, all of which are so tenacious of life as to live in spite of the choking grass and weeds on every side. Well, here is a picture of the two classes of persons that meet together to vote money for school purposes. Perhaps farmer B. has as much money as farmer A., and he knows it too, and upon this he rests content and says, "All nonsense, these high-toned notions. I never had any use for such things and don't mean that my children shall fool away their time with such trash; better git their rithmetic an gografy lessons and git ready to make money as I have." Of course he will give nothing for ornamental purposes, and his boys will tear down and destroy all that Mr. A. has done; for they are little better than brutes. And if Mr. B. has the say about locating a school house he will get the cheapest, most out-of-the-way place possible, and think he is serving the world best by so doing. What, then, can be done for the country

school yards? Evidently the only thing that can be done is to educate these bigots up to a higher level, and in order to do this you must use such means as will best reach them. Teach them by example, then appeal to their pride or conceit perhaps, for these two traits of character are not often wanting when all other virtues are.

I have in mind at present a school building and its surroundings not more than two miles from where I am now writing, that are much above the average of such institutions so far as taste and stability are concerned, and have been acquainted with its history from the time the first school meeting was called to select a site and talk up plans for the buildings. It so happened that there were a few men of taste and resolute will combined, who took hold of this matter, and although they met with the bitterest opposition and made almost life-long enemies, coming at times almost to blows, they persisted and selected a fine site of considerable extent; a flat iron between two roads, with a fine oak near the apex, toward which they faced the fine brick building, with wide cornice, neat and tasty in every part. And in after years the better part of the people made a bee and planted the whole yard out to nice thrifty forest trees, mostly maples, which to-day are fine large trees, and the whole place is admired by all, those even who fought it most fiercely; but, better than all this, it has furnished a pattern after which no less than half a dozen new school houses have since been built, and after which, probably, as many more will be modeled during the next ten years, within a radius of a dozen miles. This, then, is the way the districts about here have been led to take more care in selecting sites, in putting up a better class of buildings, and in ornamenting their yards with trees and shrubs. When the time came to build, every district wanted to do as well as its neighbor, and it matters little whether their motives were good or not so long as the results were good.

But, you will say, I am not following the texts you gave, and so now I will try and see what can be done for them. After looking over the list of topics, I looked about for some written article upon these subjects in order to get some new ideas, if possible, but found my searching almost in vain, for only one short article could I find in looking over a large number of books, and that one was from the pen of America's most noted landscape gardener, the late A. J. Downing. In regard to "How to fence the yards," he says nothing, and it certainly is a most perplexing matter, as is also the subject of gates, so much so that after all the expedients that have been tried with poor success, such as swinging gates, revolving gates, steps or stiles over the fence, and posts set in alternate rows to prevent cattle from passing through, I am almost tempted to omit the subject myself, and say nothing about it; but the truth is that any or all of these means of entering the yard would be good enough had the pupils better control of their rude habits. As to the best fence: if I could have my way, I am quite sure I should say have a law put in force by which every man should take care of his own stock and keep it at home instead of making every man fence against all his neighbors' animals. Were this the case, as it is in some towns and might be in every town if a majority of the people would only ask for it, the present state law being good enough; then a nice lawn might be kept and some one or more boys appointed to see that it be regularly mowed and kept in order. Upon this they might be given marks according to their success, the same as for good lessons, as Downing suggests, might work well with the girls in caring for flower beds. But, if fence we must have, I am inclined to favor one made of posts and 3½ or 4x4 inch rails. The rails to be about 8 or 10 feet long, mortised into the posts so

as to set corner-wise up and down, the whole to be dressed, painted and sanded. This will resist the strain of "teters" and will also keep off pencil marks and jack-knives. Make the posts about 6x8 inches of the most lasting timber to be had, and either cut the tops to a long point in gothic style or round them nicely, being governed somewhat by the style of architecture used on the house, if any predominates.

As to the trees to plant, I would say use maples and elms around the border at least. The kind to be used within the enclosure will depend much upon the size of the lot and the soil. Any tree is beautiful if finely developed, Norway spruce, arbor vitae, cedars, among the evergreens; catalpa, pepperidge, sassafras and oak, ash, chestnut, beech, birch and basswood may all be used, besides many more if there is room enough. As to the arrangement of trees, let the size of the ground determine. Small grounds scarcely admit of anything but formality,—trees in regular order,—straight rows, straight walks, etc., or, at least, some geometrical figures must be used for the curves of walks; but if the grounds are large or diversified in surface, use the flowing or natural style of planting as also for walks, flower-beds and lawn-plats, etc.

"How to care for and save the trees?" Here, as with fences, is another difficult problem. If some protection must be used to preserve the trees, a box might be made of four boards about 10 inches wide and five feet long nailed together at their edges and filled with holes one or more inches in diameter to let in the air and sunlight; but I think in most cases a little reasoning with pupils in regard to the benefit and beauty of trees will convince them that the trees are their friends and will receive their protection; but if too low down in the scale of manhood for moral suasion to reach them, then I would say use all the sprouts that need trimming off from the trees in trimming up the boys.

As to "How to manage flowers?" I can picture to myself a model school yard laid out with beautiful walks which must be quite direct between the points they are designed to connect, since they are business rather than pleasure walks: which bound fine patches of smooth lawn, and over these lawns I behold here and there nice flower beds scattered as if by chance or by the hand of some floral goddess. I would make it a matter of pride among the boys to see who could best tend and care for the trees which might have a circular space cut around the roots of each one and this space kept free from weeds and grass for some years and also the mowing and caring for the lawns. While I would let the girls care for the flower beds in the same manner, and when any one neglected the work pass it to another, thus appealing to their pride and striving to cultivate a taste for the flowers, trees, etc.

And lastly, I would have the teacher understand botany and floriculture, and have her teach the pupils all she can about these flowers and trees—their similarities and differences of parts; the harmony of colors and how to arrange flowers so as to bring out the best effect—teaching the names of all the parts of flowers, fruits and plants, as also the functions, etc. I have tried this in a winter school with only dried specimens, and it is surprising how much can be taught children in a few short talks given at the end of each week's study. Many small children learned almost all the terms used in structural botany—the kinds of leaves, flowers, clusters, etc., from just seeing a specimen of each tacked up around the school rooms, after being told a few times; and who says this is not worth more than the nonsense that usually fills up the idle pupil's leisure time and empty brain? I believe a genuine love for these rural pursuits may be inculcated that will in after years cheer many an otherwise dreary home. Try it, teachers and school officers—try it.

HEDGE FENCES FOR THE FARM, AND HOW TO GROW THEM.

BY GEORGE TAYLOR, OF KALAMAZOO.

The great importance of this subject will be seen when we examine our statistics of fencing and see the vast amount of labor and capital that is expended to make and maintain the different sorts of farm fences as they now exist throughout the various States of our Union.

As we travel along the extensive lines of railroad and cast our eyes on each side and see the vast amount of timber rail fence now going to decay we very naturally ask: How are all these to be replaced? In the majority of cases there is not now enough of growing timber to spare for this purpose, and if there was, it is found now to be too valuable to be used in this way. We see a few board fences, but these also are now found more expensive than the price of farm produce will warrant in the use for such a construction. Such, then, is the state of things as we see it all over the country, and this then brings us to the importance of the subject I have now taken in hand,—the necessity of hedge fencing. I see that of late to meet the necessity of fencing and to save the waste of timber, barbed wire fixed to proper supports is being highly recommended, and I could see in passing through a part of Illinois and Wisconsin lately, that this mode of fencing was used by certain parties to considerable extent.

But while it has certain points of merit it has also others that are objectionable, and the principal one that I shall mention is that it will be found to be much more expensive than, and not so efficient as the hedge fence that I shall recommend, which can be planted, grown and kept by the farmer, at a time when his other farm work is not pressing, and also, in many cases, the material for construction can be had within himself and is not subject to decay as timber and other materials.

I consider, therefore, that the hedge fence only needs to be put in proper operation to commend itself as the cheapest, the most lasting and efficient of all other farm fences.

I would wish it to be understood, however, that I do not here speak of hedges of evergreen and other ornamental plants which are more suitable for a lawn and the surroundings of a good residence, but I am here speaking of a farm fence, one that will grow strong, mature quickly, and be an effective barrier against all kinds of stock. I may therefore premise at once, that this fence is specially intended to meet the farming wants of the United States, and if it is found suitable for the wants of any other country, I shall not object to their taking the benefit of my advice.

I therefore lay it down as a fact intimately connected with agricultural progress that fencing and profitable farming must be associated together.

The idea, as we sometimes hear it expressed of doing away with all fences on the farm and throughout the State is, to say the least, a move in the wrong direction. All farming that is systematically conducted where there is a regular rotation of cropping, and where the raising of sheep and cattle is found a necessity to this end, it will be found that fences of one kind or another are indispensable for the protection of the various crops on the farm and for keeping the stock from straying away on the property of others.

If we would wish to see an example of good farming and fencing on a large

scale we need only to look to Scotland and England and find from their statistics the amount of production from a given area of land to be fully convinced of the necessity of having proper fences. This is more especially so where the country is taken up with large farms and is no doubt one of the reasons why farm lands have rented so high in that country.

I am aware that there are certain countries in Europe where fencing is not the general order and where a great amount of agricultural produce is raised without this expedient. But in all these countries it will be generally found that their farming is done on a scale of what is called "small holdings" and more in the way of what we would call gardening in this country, and therefore will by no means apply to farming in the United States.

In all the many and various hedge fences that I have seen both in this and European countries the prevailing idea has been to choose a plant with spines and spray of a dense and shrubby character. In England and Scotland the hawthorn is the plant in greatest request for this purpose, but here the climate is too hot and dry for it, and it has been generally found to be a failure.

The Osage orange has been the most extensively planted, and generally the most recommended, as best suited for the hedge plant of this country, especially to the south of the 40th of north latitude. But even in Southern Illinois, and east and west in the same latitude, I have seen a great many failures and wretched specimens of hedging. This, however, I was led to believe was more owing to the want of a proper knowledge of how to grow and keep a hedge than any defect in the plant itself.

The honey locust has also been a good deal recommended of late by certain parties as being more suitable for the climate of Michigan and other states in the same latitude. But I have a great objection to either of these plants for a hedge as being far too prickly to be handled with ease and comfort, and I propose, therefore, to take a new departure on this hedge question, and choose for this purpose a plant that can be handled without gloves, and with this to adopt a somewhat different mode of culture from what has been hitherto the general practice. In order, then, to carry this plan into proper effect, a plant or tree must be chosen that will root readily from cuttings and grow rapidly. Nothing, I find, will meet this end so well as some of our tree willows or poplars. The Huntingdon willow, which is grown so much in England as a large tree, would, I have no doubt, answer the end admirably, as would also our own white willow, which was so much talked about and planted for a hedge a few years ago, and then pronounced a failure, having never been cultivated in a proper way, so far as I am aware, to make it a substantial fence.

The Lombardy poplar, being also a strong grower, and when well established and cut over would send up a vast number of strong shoots and could be easily constructed into a strong hedge fence.

The first thing, then, in making a hedge of this sort, is to have the ground properly prepared; it ought to be in a cultivated state the same as for wheat or corn. I would recommend that this preparation should be made in the previous year or in the fall. If the ground is found not to be deep or rich enough, it ought to be made so by drawing a deep furrow with the plough, throwing it up to the right and left, and if the bottom is still found to be hard and poor some more should be taken out and a quantity of good rich earth put in. The whole should then be leveled back over this and made smooth for planting. Having the ground thus prepared, and spring being the best time for planting, the next thing in order will be to have the plants or cuttings

prepared. These should be not less than ten inches or a foot in length, and from one-half to three-quarters of an inch in diameter.

Another question here comes up, whether these cuttings should be planted out in the line of hedge at once, or whether they should be grown and rooted for a season previous to planting in this way. This depends upon the nature of the soil and the season, for if there were a month or two of hot, dry weather before the cuttings get fully rooted, a number of these might fail, and so cause a blank in the line of fence, which would have to be made up, as a matter of necessity, with rooted plants. It would, therefore, on the whole, be more safe, and the hedge would also come sooner to perfection, if the cuttings, previous to their setting out in place, were rooted. In this latter case, if the ground is all prepared and in good order, the most expeditious way would be to draw a deep furrow with the plough along where the line of hedge is intended, and then set in the rooted plants at the distance of a foot apart, when the clay could be turned back on the roots either with the plough or the spade, and then follow this with a good tread of the foot. If the cuttings are planted at once they could be done in the same way as mentioned above. I have no doubt but these tree willows would grow and thrive well on all our prairie soils, and even on all lands where good wheat and corn can be raised. But should it be found that on some of our dry upland soils they did not grow quite so readily, the Lombardy poplar, or even the white oak, could be formed into a good fence.

And there are several other trees which I could mention which, after being established in the ground and cut over would send up a number of strong shoots. All such, on the plan I am about to submit, are perfectly capable of being constructed into a strong farm fence. The only difference would be that plants grown from seeds would require more labor and expense previous to planting; but this is the process in England and some other countries where hedge fencing has been found indispensable to the success of the agricultural interests, and there is no doubt but if there was once a want for such an article in this country, the supply would soon be adequate to the demand.

Having now mentioned a few trees suitable for hedging, I proceed to describe the mode of cultivation that is necessary to grow the fence. After having finished the planting, the next thing is to keep the ground clean by cultivating on each side through the course of the summer. I think a cultivator could be made and adjusted especially for this purpose. Any weeds that might be left round the stems could be taken out with a light hoe and the hand. This cultivation should be kept up and the plants encouraged to grow as strong as possible for two or three years. Let there be no cutting of the tops, except it may be a little at the sides to allow a free cultivation. My object in this is to have a strong growth of top in order that there may be a corresponding growth of root. These, according to the laws of vegetable physiology, act and react upon each other, so that the growth of the whole plant is greatly strengthened and encouraged. The next process in the order of operations is the cutting. This should be done in spring, with a hedge knife for the purpose, having a handle of two to three feet in length. These are of various shapes and sizes, suited for cutting and dressing a hedge in all its different stages of growth. The tree or plant is then cut off with this implement from six inches to one foot from the ground, and with a slanting cut upward. Below this cut there will soon come out a number of strong branches, which in due time will form the frame work of the future hedge. It might be well at first not to allow any

more than six stems to grow up, and these ought, at the same time, to be as much encouraged to grow in a perpendicular form as possible. In order to do this, and greatly to facilitate the whole operation, a light scantling rail, or a line of round poles, might be run along the centre of the hedge, as a sort of support and fixture till such time as it gains a stability in itself. This centre piece could be supported on light stakes driven into the line of hedge at intervals, and this centre rail either fixed on the top of the stakes or along the sides with a nail. After one or two years' growth of these strong shoots, the next process is to form the hedge by crossing and pleating these at so much of an angle as will form a sort of net work which will make such a close body in a little time that only a small bird will get through it. To do this work of crossing and pleating with facility, the hands of two persons are necessary. The shoots should all be laid, in crossing each other, from right to left, and fixed at some of these crossings with small copper wire, put up in a circular coil and kept in a pocket with the end of the wire out to be available when wanted. One party being thus equipped the one would be laying in and holding the shoots together at the proper distances, while the other would put the wire round and fix it with a cross twitch and cut it off with a pair of small nippers or shears for the purpose. It would also be well to have as many of the branches as possible to cross, and fix them together a little above the centre rail, so as to give a proper balance and stability to the whole body of the hedge. This whole work of fixing, when the parties are accustomed to the work, will be done with great ease and facility and remain a permanent fixture. It is possible that many of these branches will thus unite in a little time, as a graft in a sort of in-arching process, by which the whole hedge will become as one solid body.

The next question is, how high is this hedge wanted? I should think it ought to be cut off at first at $4\frac{1}{2}$ or 5 feet as there will be a tendency for it to get a little higher annually.

The last process to describe in the plan of this hedge in order to make it a success is the annual dressing with a hedge or switching knife so as to keep it close and near to the same height. This must be well attended to, otherwise the whole work and purpose of this hedge fence will in a great measure be frustrated.

This annual cutting and dressing with a hedge or switching knife can be done any time from the beginning of September, when the season's growth is made, until the beginning of May in the following year. It is quite a simple and interesting work after a person has acquired a little skill and practice in the operation. A man first goes along one side cutting off in the first place any lateral shoots near to the bottom. A good hedger always cuts upward. The knife for light twigs is always a little hooked at the end and both hands are used in catching and cutting the lower twigs. After these are cleared off the upper branches are cut away with one measured stroke of the arm as near to the old cut as possible. When one side has thus been done, the man turns and the other side is done up in the same way. By this means the hedge is yearly kept to a proper uniform size and in such bounds that a plough can work close up to it.

The cost of this annual dressing amounts to a little each year, but it need only be a very little, if a farmer is skilled to do this work himself. I could engage to do it for two cents per rod and make fair wages at that contract. But in this progressive age there are machines got up for doing this very kind of work. I saw a model of one myself exhibited this fall at the

St. Louis exposition, but it seemed to me to be far more heavy and cumbrous than I should think was necessary for the cutting of the annual spray of a hedge.

Instead of being operated with four horses, as was intended with this machine, I consider that one horse with a suitable gearing would be quite sufficient for the weight of the work to be done. I see also lately from a Scotch paper that a machine for the same purpose was tried on the thorn hedges of a large farm with which I am well acquainted, and the work was pronounced by judges to be done well and with expedition, but I failed to see the plan upon which it was operated. There is no doubt therefore, when hedging becomes a fact and a necessity, that a light and suitable machine will be invented especially for this purpose; and when this is done one machine could do the work on twenty farms, so that a fence after being once constructed will require very little expense to keep it annually in good repair. It will thus be seen that in growing a hedge in the way I have described, it must be done in a regular, consecutive order and everything ought to be well done in its own time and place.

As it is strictly in attending to these things that success in the work will be obtained, I shall again mention and sum them all up together, so that the whole work may be seen at a glance as it stands in its proper connection.

The first thing to be done then is the levelling and preparing the ground.

The second is in drawing a straight furrow or line and planting the hedge.

The third process is to grow and cultivate the plants for two or three years.

The fourth is to cut the plants over to six inches or a foot from the ground.

The fifth is the crossing and pleating when the shoots are in proper order for this process to form the body of the hedge. And the sixth and last is the annual cutting and dressing to thicken it up and keep it in proper bounds.

I have thus laid down a method of growing a farm fence, and I call it a new departure from the old way, and this for two reasons. The first is that I do not want a hedge of sharp spines like the Osage orange or the honeylocust that is dangerous to handle; the next reason is that in order to carry out my plan I have chosen a plant that is a strong, free grower with straight shoots that can be so artificially placed as to form a solid and impregnable barrier of any height that may be wanted. It will thus be seen from what I have stated, that this plan of making a hedge fence is just a carrying out by an artificial process a plan that is in conformity with certain laws of nature in connection with the varied form of the growth of a plant or tree, to obtain a certain desired end. I have no doubt, therefore, that in carrying this idea into effect some new thought may be suggested by which this same process may be wrought out to a greater state of perfection.

I now come to speak of another thing in immediate connection with this subject, and which I have no doubt is already anticipated, namely:—the expense of making and keeping up such a hedge, or in business language—*will it pay?*

In order, therefore, to meet this important question and make it as plain as possible, we must first begin with the plants and the preparing of the ground for planting.

This preparation I consider to be a matter of such small importance that with any farmer it should scarcely be taken into account; but as there is some work in casting up a furrow with the plough and setting in the plants or cuttings along the line, the work, I think, might be done for a cent per rod.

If a farmer cannot grow the plants or procure the cuttings himself, I think

a nurseryman could do it at 50 cents per hundred, which would cost a little more than 15 cents per rod.

The cultivating of this line of fence for two or three years would be very little labor or expense, it being work that could be done any time at his convenience.

The cutting over with a hedge knife near the bottom in order to send out strong branches to form the body of the hedge could be done for a cent a rod. The only thing that would require some labor and expense, would be the crossing and fixing with wire in the way I have described. I think that this work, including the expense of material, could be done for 25 cents per rod. According then to this calculation the whole work in completing the hedge might cost from 35 to 40 cents per rod. All that would be necessary after this, would be the annual cutting and dressing to keep it in proper bounds, and this work if done with a machine could be done for less than a cent per rod, and it is to be observed that all this work can be done in the fall or winter season, when no other farm work is pushing. It will thus be seen that when the planting and keeping of hedges, as I have now described, have been systematically gone into, the expenses will be comparatively small to what they are now, in any form in which fences can be made, and it will also be found that they are quite indispensable with good and profitable farming.

There is another thing for which hedging is specially required in immediate connection with the agricultural and industrial interests, and that is forestry.

Hedging and forestry must naturally go together in this country; the one cannot get along properly without the aid of the other, and in the order of things the hedging must go before the forestry. This will be quite obvious when we take into consideration that in making a plantation of young trees, they would require to be properly fenced so as to secure the plantation from all depredations of cattle and sheep on the farm, till such time as the trees are strong enough to protect themselves. It would therefore be the proper way previous to starting a plantation to have the hedge for fencing it started, while the land where the planting is intended could be cropped, in the usual way, until such time as the fence was sufficient for a protection.

By this means everything would go on in an orderly manner, and we would have the pleasure and satisfaction of seeing the plans that we had formed and the work that we had done growing up every season to greater beauty and utility.

This hedge question, the same as forestry, has also a most important bearing and relation to certain other parties besides farmers.

Many of our railway lines, as a matter of necessity, are for the most part protected with costly board fences; these in a few years will fail and have to be replaced with the same or some other material. I have no doubt therefore that this hedge fence which I have been recommending to farmers, will have to be the railroad hedge in the future. And I would here give a word of advice by saying to all those companies that it is now the time to set about this matter, as their present fences, before they fail, would protect the young hedge till it is fully established as a perfect fence.

Hedging at this day and in this age of our country is something that is necessary to go before and prepare the way for the future development of the vast resources of this great nation. In this same connection, I have no doubt but in Texas and some other of the extensive ranges in our great states and territories where the raising of stock is now being of so much importance, and

where such have to be herded and kept in proper bounds, that a hedge such as I have now described would greatly enhance the value of all such property, and would be among the first steps of progress to a more perfect settlement of the country. There is no question, therefore, that if a system of hedging were introduced in the way I have mentioned, that not only farmers and all others interested in landed property, would derive a benefit in the first place, but through them the whole community would be gainers. Everything that gives labor and employment cannot fail to benefit the general community, and this growing and keeping up of live fences would be of a special advantage to many of our rural population in giving them employment at that season of the year when so many of that class have a difficulty in finding out-of-door work. In Scotland and England hedging is a profession, and on many of the large farms and estates a man is engaged for the season whose special business it is to see that all the fences are kept up in their proper order.

I now conclude this communication with an assurance to every farmer and citizen that the growing of hedge fences and the keeping of them in the way I have described will not only repay for the labor and capital expended, but will also prove a most profitable investment on the value of all landed property, and would at the same time be an immense saving of valuable timber, which would be available for every purpose for which it is so indispensable; and more especially so, when we think upon the extra amount that will be required to meet the wants of our vast country with its fast increasing population.

THE ANNUAL MEETING.

HELD IN THE VILLAGE OF ALLEGAN, DECEMBER

2, 3, AND 4, 1879.

A RECORD OF DISCUSSIONS AND FULL TEXT OF LEADING PAPERS.

In acceptance of an invitation from the Allegan County Pomological Society, the State Society held its annual meeting in the village of Allegan. The convention held its first session on Tuesday evening, December 2d, which was marked by an unusually large attendance from abroad, and a fair representation from the immediate vicinity. There were 125 or more present at the opening, and the numbers held good throughout the entire meeting.

Among those present from outside Allegan county were the following:

Messrs. J. K. Edgell, J. Lannin, J. W. Humphrey, D. B. Williams, T. T. Lyon, and Chas. Monroe of South Haven; H. C. Sherwood, Watervleit; A. Chapman, Bangor; Wm. Rowe, P. Johnson, Grand Rapids; A. C. Glidden, J. C. Gould, Paw Paw; W. K. Emmons, Byron Center; Freeman Rice, Lawton; S. B. Mann, Adrian; S. M. Pearsoll, Grand Rapids; N. Chilson, Battle Creek; Judge Ramsdell, Traverse City; J. N. Stearns, Kalamazoo; Emmons Buell, Kalamazoo; Wm. Rowe, W. N. Cook, Grand Rapids; J. D. Baldwin, Ann Arbor; C. R. Coryell, Jonesville; W. A. Brown, Stevensville; S. D. Brown, Benton Harbor; Peter Collar, Adrian; Geo. Taylor, Kalamazoo; W. J. Beal, Lansing; H. P. Hanford, Bristol, Ind.; J. C. Ratcliff, Richmond, Ind.; E. M. Cottrell, Greenfield; T. W. Palmer, Detroit; M. B. Williams, Kalamazoo; Robert McNaughton, Jackson; C. N. Merriman, Pentwater; James Satterlee, Greenville; F. A. Gulley, Lansing; A. G. Gulley, South Haven; Thomas Petty, Geo. Seagrove, Spring Lake.

The press was represented by R. F. Johnstone of the Michigan Farmer, Edwy C. Reid for Allegan Journal, D. R. Waters for Allegan Democrat, E. F. Guild for the Saginawian and Saginaw Herald, Frank Gulley for the Lansing Republican, A. C. Glidden for the Post and Tribune, C. W. Garfield for the Free Press, A. Bilz of the Spring Lake Republican, and Mrs. Lena Woodhull of the Saugatuck Commercial.

President Lyon called the meeting to order promptly at half past seven o'clock and introduced Mr. Hilton Dewey, President of the Allegan County Pomological Society, who in a few well chosen and modestly spoken remarks

welcomed the State Society to the village of Ailegan, and tendered to the visiting members the hospitality of the town.

President Lyon replied briefly, hoping that while the society in its meeting was expecting to aid the fruit growers of the immediate vicinity, the members would not forget that the society was at the same time gathering strength for further labors.

The first subject on the programme was then called up, to wit:

HABITS OF OBSERVATION A PRACTICAL ASSISTANCE TO THE FRUIT-GROWER.

Mr. Robert T. McNaughton, of Jackson, first responded with an essay, as follows:

It seems almost presumption for one who has had so limited a time for observation in the field of fruit raising, to attempt to advance any ideas which shall be of interest to men whose experience and study in the work are reckoned by long years; but our worthy secretary, it seems, has thought it worth while to allow me the expression of a few thoughts on this subject, which at the outset, let me say, seems to afford opportunity rather for comparison of similar thoughts than for a discussion of different views of the topic; for no extended remarks will be necessary to show those present that it is an assistance to a man in any business to keep his eyes open to what is going on around him. There are always, in any occupation, plenty of little matters that need timely attention to keep the machinery of business running smoothly. A man must be observing of all these trifling things, and prompt to give attention to them, or his business will continually seem to drive and hurry him, whereas, to be satisfied with his work he must be behind it, driving it along promptly, and getting ready to do everything before it requires doing. To do this he needs to be observant and watchful of all sides of his work, and to make this practice of observation habitual. Perhaps this is especially true of a fruit raiser. Some one has said that to till the soil and do it well needs more brains and general knowledge than any other business. Perhaps this is so. At all events, the fruit grower, to do the right thing at the right time, needs the knowledge which is the result of experience in observing; and experience is only valuable as it gives one the result of his observations.

Now, how must we observe, and what? To answer this question: Let me suppose a man just starting an apple orchard. He wants to do his work just as nearly right as possible, and, if he has had opportunity for observation in this line of work, and has observed well, he will be familiar with all the little details of the various operations of enriching the ground and laying it out, and setting the trees, and will know just the right and the wrong way to do it all. Now, to the man who has had no experience—and this means no observation, since any experience through which one might pass is of little benefit unless the good to be got from it is observed and remembered—to such a man the operations would be full of difficulties, and he would find himself constantly making mistakes. Careful observation as to the cause of these mistakes would be of practical assistance to him if he ever had the same work to do again, which he very likely would have before long, if he could not bring the result of the habit of observation to bear upon it in the first place. This preliminary work, however, a man is supposed to do but once with the same orchard; but not so with the cultivating, pruning, destroying insects, keeping his trees healthy, thinning

and harvesting the fruit, etc. All this must be done over and over again, and careful observation in each performance, together with getting down one's observations in a note book kept for the purpose, will enable a man to do his work each time better than before. Now, let him make the practice of observing well a habit, and a part of his regular duties, and the raising of good crops of fruit becomes with him less a chance and more a certainty, and he goes about his business with the feeling that a certain course of action will, as he knows from his previous observation, produce certain results in all cases, other conditions being the same; as, for instance, that to remove one of two apples growing on the same spur will cause the remaining one to grow larger than if both are left.

If those present, then, have exercised their power of observation, I think their thought on the subject will lead them to concur with me in saying, that the carrying out of a habit of observation in their business will prove of practical assistance to them and all fruit growers.

VIEWS OF MR. LILLY, OF ALLEGAN.

Mr. L. A. Lilley, of Allegan, said: In looking back at the improvements that have been made in this country since its settlement, and at the means that have been employed in their accomplishment, it will readily be seen that observation and experiment are very important features to be considered. In observation we notice facts as they occur in nature, while in experiment we add to observation, control of the circumstances which produce the fact. Hence these sciences which depend on observation alone are at a great disadvantage. Besides those that can use experiment, for they may have to wait years for an observation, while an experiment may be made in a day.

In looking over the different pursuits that men follow, we see that the most successful are the best observers. The skillful hunter depends on his acute sight to direct him to his prey. The enterprising merchant must ever be on the lookout to see the changes in the signs of the times which will affect his business. The successful farmer regards the demands of the market, the wants of his soil, and directs his course accordingly. Is it reasonable to suppose that a man can succeed as a fruit-grower without good habits of observation any better than in other lines of business?

The student of nature finds that there is a constant warfare going on. All plants and animals have their enemies, and if the weaker are not protected against the stronger, they are destroyed. The farmer finds that all the crops he raises are in danger from some enemy, and they must be protected in some way if he expects to succeed. So also the fruit-grower finds that there is not a fruit of any kind but what needs his fostering protection; and this great question of protection must stand first in our minds, and first in the discussions of our societies; and as observation is the great source through which we obtain our facts to form our conclusions, it is of great importance that our habits should be correct ones.

To see the difference between a man with correct habits of observation and one without we have only to look at their orchards. The one has a healthy and thrifty appearance, while of the other we would say that the man had made some mistakes in its management. The first man when he sees that something is the matter with a tree or plant, begins to examine it closely; if it is a peach tree and the leaves begin to look yellow, he does not at once pronounce it the yellows, cut it down and burn it up, but he examines it from the leaf to the

roots, takes into consideration the soil, location and any other circumstances that might probably affect it. With the facts thus obtained he may with some certainty determine the cause of the trouble, but must not be too sure of it without more than one instance. Speaking in general we would say, be not too hasty in coming to a conclusion or forming an opinion.

Good habits of observation can not be acquired except by long study and close application. They will call attention to many things that an inexperienced man would not notice.

The fruit grower in order to succeed must be up with the times; he must not only pay attention to the producing of first-class fruit, but after he has raised it, he must be acquainted with the markets and know how to dispose of it to the best advantage. He should strive to be a good observer, make good use of the knowledge thus obtained, and he may be sure he is on the road to success.

ESSAY BY MR. HAIGH.

R. Haigh, Jr., of South Haven, presented an essay upon the same topic, which we give in full:

All knowledge comes originally from observation. The discovery of all new facts, the establishment of all general principles, all progress, all advancement, all improvement is the result of observation.

The natural tendency of the human mind toward observation is evidenced in the earliest manifestations of intelligence.

Not only is the mind drawn by its own inclinations, but the whole economy of nature and all manifestations of its phenomena are such as to draw the mind and attract the attention.

"If there is anything clearly manifest," said the lamented Jacob Abbot, "of God's intentions in regard to employment for man, it is that he should spend a very considerable portion of his time upon earth in acquiring knowledge—knowledge in all the extent and variety in which it is offered to human powers." The whole economy of nature is such as to allure man to the investigation of it, and the whole structure of his mind is so framed as to qualify him for the work. If now a person begins in early life, and even as late as twenty, and makes it a part of his constant aim to acquire knowledge—endeavoring every day to learn something he did not know before, or to fix something in the mind that was not before familiar—he will make an almost insensible but a most rapid and important progress.

The field of his intellectual vision will widen and extend every year. His powers of mind as well as his attainments will be increased; and as he can see more extensively, so he can act more effectually, every month than he could in the preceding.

Education is valuable far more for the discipline of mind that produces correct habits of observation and the power to apply general principles than for the simple facts stored up in the memory. While observation is an important element in the acquisition of all knowledge, in fruit raising it is much more important, because of the uncertain elements continually affecting it. In many branches of science all uncertain elements can be eliminated, and a definite result becomes inevitable; but in all matters involving vegetable growth the uncertain influences of soil, climate, season, excess or lack of moisture, insect ravages, and many other things, render the establishment of general principles the result only of close and long, continual observation. The mea-

sure of success will depend largely on the ability to so understand and use these influences that they shall promote rather than retard all operations affected.

While habits of observation are so essential to the acquisition of all knowledge and the evolution of general principles, they are no less so in their more specific application.

Plant growth in all its great variety and the varied influences affecting it,—best methods of overcoming adverse and augmenting advantageous influences,—the relation of the plant to the soil, and the influence of each over the other.

To the fruit grower, perhaps the most important objects to be gained are improvement in methods of culture and more thorough knowledge of the best practical management of the orchard. Whatever will add a dollar to the value of the crop and save a dollar in the cost of its production the fruit grower wants to know, and it must be learned mainly by observation. He may hear or read, but he can *know* to a certainty only by observation of results on his own place. One of the best means of acquiring habits of observation is by taking notes and keeping a record of each day's doings. Writing out briefly at the close of each day the result of the day's labor and observation will be found to add greatly to the interest of the work, and aid much in strengthening the memory. By reference to these results, and a comparison of the results of several years, many important facts and principles are evolved. By thus watching our footsteps we can tell if we are going up or down—if gaining or losing—if we are making the advancement necessary to final success, or on the backward track to ultimate failure. And if the progress be in the wrong direction, he will soonest change that direction, soonest make up for past mistakes, soonest get on the right road to success, who knows best how to observe.

OPINION OF JAMES SATTERLEE.

Mr. James Satterlee, of Greenville, followed Mr. Haigh with a short address, continuing the discussion as follows:

Mr. President, ladies and gentlemen,—Our success in any business or enterprise on which we may enter, depends largely on the experience or practical knowledge, which is the same thing, which we have of that business or enterprise. By experience I mean the practical knowledge we have obtained, whether by our own efforts or whether handed down to us by means of books or tradition. Experience is obtained in two ways: first, by noticing facts as they occur without any attempt to vary the frequency of their occurrence or to change their relation to each other or the causes that bring them about. This is observation. Or we can bring to bear causes that will vary the relation of facts to each other by increasing or diminishing the frequency of events over which we have control and noting carefully the changes produced. This is experiment. The latter is out of the province of our discussion, which has only to do with observation proper, or what might be called passive observation. Now, to gain any experience that will be of value to us from passive observation, it is necessary that all our perceptive faculties be active and ready to take cognizance of the real facts as they occur. Our minds must be divested of all prejudice in order to accept the truths that observation brings to us. We must be able to distinguish cause from effect, and to note the varying circumstances under which the operations of nature are carried on. Much of the present advancement in the arts and sciences has come from the habits of observation of such men as Watt, Morse, Edison, and others too numerous to mention. Improved breeds of horses, cattle, sheep and swine are the result of experience

obtained through the intelligent observation of such men as Bates, Booth and Bakewell. Indeed, Mr. President, it hardly admits of discussion that habits of observation are of practical assistance; are, indeed, a necessity in all the industrial pursuits of life. I may say that this is *especially* true of fruit raising. The fruit grower has to deal with climate, soil, location, markets, insect, and other enemies; blight and rust and mildew, and other diseases, and to be successful he needs all the practical knowledge possible. And he can attain it only through habits of observation. By habits of observation I do not mean periodical fits, if I may so express it, of noticing facts that are constantly occurring, but the habit of giving such close attention to these facts that *nothing* escapes us; that we can use them as a part of our knowledge; that we can recall them, generalize them, and bring them to bear in all our plans and in all our work. It is not an easy matter to acquire such habits. They are plants of slow growth. It takes time and close attention. It is easier, much easier, to acquire habits of carelessness, habits of running by and overlooking facts without any investigation. Few of us really have fixed habits of observation. Yet it pays to acquire such habits. It is worth our time, and it seems to me that fruit growing affords better facilities for this than any other pursuit. It may be said that the fruit grower has no time for observation. He certainly has as much as the general farmer, and then, too, he is in such close relation to all the details of his work. He spends most of his time in his orchard, vineyard or gardens, and is intimately connected with his business and conversant with all its details. He knows every tree, vine or plant from the beginning, and if he loves his work,—as who does not?—he can not help but be observant of all the changes taking place day by day and year by year. Each tree seems a companion or friend, and he observes with interest every new development. The insect enemies, and their name is legion, have to be watched and their ravages guarded against. This fact alone is sufficient to prove the value of fruit growing as a means of acquiring habits of observation, and to prove also the necessity of such habits as a guaranty of success in fruit growing. Each new enemy as it comes has some new way of doing its work, and must be watched, its habits noted, and means devised to prevent its ravages. The fruit grower has enemies also, as well as friends, among the feathered tribes, and it needs the closest observation and the nicest discrimination sometimes to judge between friend and foe. There are also many mysteries connected with the diseases of fruit trees and plants that intelligent, close and long continued observation alone can solve. May the time soon come when the cause of blight and rust and mildew may be known and the remedy for each be understood. We should each realize the importance of careful observation as a means of acquiring experience. We should feel that it is a necessity, and when we feel this the habit will come naturally, and when once acquired will never leave us. It teaches us where and when to plant, when to prune, how to cultivate, where and when to market, in fact about all there is to be known about fruit growing comes through this means. And we should not confine our observation wholly to our own orchards and our own methods, but should observe the methods pursued by others, whether successful or otherwise. We may learn as much from the failure of others as from their success. Our own failures will show us where we have lacked in observation, and our success will prove to us the importance of close attention to every fact that has a bearing upon our work.

As Mr. Satterlee closed, Mr. Potter of Kalamazoo remarked: "There is a vast difference between superficial and practical observation; the man who generally observes best is the one who has something at stake—if that be

the support of his family, he is apt to make the observations that will be of the most practical assistance. The new methods of fighting insects and accomplishing quickly the operations in fruit-growing, are usually originated as a result of observation on the part of men who are to be the most benefited by the improvement. The trouble is that a majority of us do not do half as well as we know. The difficulty lies in the fact that we do not confine our observations to a sufficiently limited territory; we spread over too much ground and are too indefinite in our purposes. As I look back in my own experience, this has been emphatically the case."

Following this discussion President Lyon gave a short paper of

SUGGESTIONS FOR THE IMPROVEMENT OF THE SOCIETY.

To the Michigan State Pomological Society:

In opening the last session of the society for the term of office to which your partiality elected me, it seems appropriate that some review should be taken of the operations of the past year, and from them some suggestions be deducted bearing upon our labors as a society for the year next to ensue. So far as the financial and business operations of the past year are concerned, they may be expected to appear in the reports of the several officers and committees. I may therefore confine myself to the general scope of our operations; and to incidental matters aside from those indicated. During the past two seasons, covering two annual fairs, the society has been engaged in evolving and maturing a system of premiums of a somewhat novel character; aiming (without diminution of the interest of the exhibition), to render it more decidedly educational, by eliciting through the exhibits, some idea of the value put upon each variety by the exhibitor, and also through the awards and reports gaining a similar conception of their values in the estimation of committees. Inasmuch as steps must be at once taken looking to the arrangements for next year's exhibition, the present is an opportune period for the criticism of this system, with a view to such changes as may seem needful for its more satisfactory and successful working in the future. The past year has also witnessed the first issue of the society's catalogue of fruits, which has now been before the public long enough to have developed such objections as may be found to lie against it. Inasmuch as it is the purpose of the society to revise and republish it, with each annual volume of its Transactions; and in consideration of the fact that its value must consist greatly, first in the correctness, and second, in the fixity of the matter contained in it; it becomes of the highest importance that, if there are any changes to be made in its general plan, the will of the society respecting them, be expressed, at once and unmistakably; that the committees on revision may take form accordingly. It will be observed that it embraces many fruits, more or less grown in the State of but little value, and the catalogue attempts to discourage the farther planting of such, by the low values given to each, and by also stating the objections to them in the column of remarks. Occasional criticisms, through the press and otherwise, leave a possible doubt as to the approval of this feature of the catalogue; hence we suggest that the society take the requisite action to settle the doubt at once and permanently.

The number of volumes of the Transactions, placed at the disposal of the society, is by no means adequate to the demand; and in view of this fact, and of the very much larger demand for the catalogue, the society last year

secured, at its own expense, the printing of several thousand copies of the latter for distribution in pamphlet form. Should there be, in the opinion of the members of the society, doubts respecting the wisdom or propriety of such expenditure, action should at once be taken to give expression to the same; since, if issued at all, it must be done in connection with the printing of the volume of Transactions.

The annual executive meeting of the State Agricultural Society, at which preliminary arrangements are to be made for their operations during the subsequent year, including the organization and management of the annual State fair, next September, usually occurs in December or early in January. If, therefore, it shall be our purpose to continue our arrangement with them for the control and conduct of the pomological and floral departments, it becomes necessary that steps be taken at this meeting, looking to that object, since such arrangements, heretofore, have only been made for the current year.

The place of holding the February meeting of this society should, if practicable, be determined at this meeting, unless it shall be found expedient to leave the matter open, in which case it may be left to the decision of the Executive Committee, while the same course may be taken respecting the time and place of the June meeting.

There is great reason to regret that we, as a society, maintain so slight a hold upon the sympathy of local societies, and give and receive so little in the way of active co-operation. It becomes us to carefully consider whether or not measures can be devised to strengthen the bond of union between the two, and by more thorough concert be able to give a stronger impetus to the cause in which we are all laboring.

It is also to be regretted that so very few, even of the actual fruit-growers and horticulturists of the State, become members of the society. The fact seems to be that hundreds of such persons, with large pecuniary interest in our cause, are constantly hanging upon its skirts, attending its discussions and deliberations, profiting by its efforts, and even by one device or another becoming possessed of its volumes of Transactions; yet contributing nothing to its incomes, or toward the liquidation of its inevitable expenses; in fact making use of its open-handed, public spirited, working members, without consideration, to obtain the means or ability to "turn an honest penny," in the business to which they are looking for their livelihood. We will not attempt to farther characterize this class of hangers-on upon the society; but will rest content with the suggestion that we, in conjunction with our worthy treasurer, look carefully about us for some effective means of converting, if possible, *all* the attendants upon our meetings, into paying members; and, in so doing, greatly increase our ability to carry forward the work we have in hand.

It would seem, indeed, that we owe to the State, which supplies the printed volumes which we annually distribute, not to allow them to pass from our possession, except as a consideration for some *increase* of our ability to do effectively, the work to which the society has consecrated its energies; and in consideration of which they are bestowed.

The society, as we think, very reasonably expects of those elected to positions upon its Executive Board, that they will, as far as possible, attend its sessions; and especially the meetings of the board. It has not unfrequently proved a source of embarrassment that, at board meetings, especially, members have been absent; occasionally to such an extent as partially or wholly to defeat the object of such meeting. The regulations of some similar societies provide, in such case, that the absence of a member of their Executive Board, from

two or more consecutive meetings, shall be treated as a withdrawal or resignation; authorizing the board to declare a vacancy, and to proceed to fill the same, by appointment, for the remainder of the term. We suggest that the society take into consideration the propriety of so amending its constitution and by-laws (one or both, as may be found necessary), as to provide for similar action of our executive committee, in cases in which it shall seem needful.

On motion of Secretary Garfield, the society selected a committee in whose charge the president's address was placed, with instructions to report methods of carrying out the suggestions therein contained.

The meeting selected as such committee Chas. W. Garfield, Grand Rapids; S. B. Mann, Adrian, and Byron Markham, Saugatuck.

The second topic for discussion, as announced on the programme, was next taken up.

INFLUENCE OF LOCAL HORTICULTURAL SOCIETIES UPON COMMUNITIES.

W. A. Brown, Stevensville.—I have no paper but will arise in my place and say a few words to open this discussion. In general terms I would commend most heartily the work that may be done by a local horticultural society; one of the best illustrations of the benefit of such an organization we have at South Haven, where the fruit growers get together nearly every week to compare views and institute measures for their common good. In Berrien county, had there been a good working society of that character, our peach interest would not have been simply a matter of history to-day. Our peach orchards, desolated by the yellows, are a standing argument for united action for their preservation in other localities. It is by and through the means of fruit growers bound together in an association that it is possible to enforce such a practical law as the yellows enactment.

H. C. Sherwood, Watervliet.—I am not a member of a local horticultural society, but my observation has taught me that those fruit growers who get together from week to week, as the operations connected with their work change in the season, reap great benefits thereby, and each one has the advantage of all the best thoughts and methods of all his neighbors in the same business. Fruit growers, to succeed, must keep their eyes open, and the more of them that are looking in unison the better results will follow.

A. G. Gulley, South Haven.—I can speak for the South Haven Pomological Society. For eight years it has held weekly meetings, there being scarcely any intermission. It is at the foundation of the peculiar success of our locality. It is through its influence that people are educated to important methods of action. We have a large membership; the members are scarcely ever all there, but at each meeting there are enough present to maintain the interest. Our discussions are all reported in the weekly paper and give it a characteristic feature. There is no danger of each man losing his identity as a fruit grower by having common methods of action with other men. One thing is certain, we never could have made our yellows law effective without the unity of action which has resulted from our local organization. By means of it we bring a pressure to bear that cannot be withstood.

Joseph Lannin, South Haven.—A few years ago I began to plant out fruit trees, and knew nothing more of fruit culture than I did of railroading. It was during the second year thereafter that our society held a meeting at which

each fruit grower related the mistakes he had made. I said nothing, because I did not know enough to know when I had made a mistake; but at that meeting I learned more than the worth of my membership fees, since the organization, at one thousand per cent. interest. I then learned how to steer my own little craft so as to avoid numberless sand-bars, the location of which I knew nothing before.

H. P. Hanford, Bristol, Indiana.—When we began in our locality there was no one ahead of us from whose experience to profit. We had to mend our ways by means of our own observation as fruit-growers and have reaped the benefit of a practical application of the excellent thoughts which the young men have given us in their essays to-night. We made lots of mistakes, and very ludicrous ones, too. It is a wonderful help to have some one go ahead and make mistakes and then be honest enough to confess them for the benefit of others. On the principle that "confession is good for the soul," there must be some benefit recur to those who relate their unfortunate experience. One word about observation. You can not make a good observer of a man who does not delight in his calling. The fruit-grower must love his business to make the most of his perceptive faculties in his vocation; he must love the trees and plants for their own sake; remember that "love is the fulfillment of the Law," and the maxim applies to the Pomologist as truly as to the Puritan. Good strawberries can not be raised by one who does not love the growing of them.

Byron Markham, Saugatuck.—So far as fruit-growing and horticultural societies are concerned my experience has all been one way, and that is in favor of the societies. I came from Wisconsin to Saugatuck to grow fruit. I knew nothing about the business, and was headstrong about some things. People related their experiences in society, and I thought I knew enough to do better than they did in the same method. I always found out I was wrong. Our Lake Shore Society has held monthly meetings for years and I have never attended an unprofitable one. The society has been my school, and I do not hesitate to give it the credit of teaching me nearly all I know in the fruit growing business.

Aloys Bilz, Spring Lake.—The successful cultivation of fruit in Ottawa county went along with bright active society work in the old Western Michigan Horticultural Society. Its decline and the death of the society were concomitant. I believe to-day that nothing would help us more in recuperation than a local horticultural society.

W. N. Cook, Grand Rapids.—In our local society we do not reap the benefit we ought, because other business steps in and takes the place of the society. We are not so exclusively engaged in fruit culture as to maintain a working interest in the organization, still we keep up our monthly meetings.

C. N. Merriman, Pentwater.—Men do not let their selfishness work in the proper direction with us. They do not see that it is for their highest benefit to put forth their best efforts in establishing and maintaining a local society, but, notwithstanding, this is a fact.

Mr. D. M. Brown spoke of the damage done to careful growers by careless ones who flood the markets with poor fruit. The peaches in Berrien county had been entirely killed by the yellows, and their cultivation was abandoned entirely. He represented fruit culture as being in a deplorably dilapidated condition in his county.

Mr. Sherwood dissented from this, and said that state of affairs must be local—it did not, he thought, extend over the whole county.

Hon. N. W. Lewis, of Ganges, called attention to the difference consequent upon having a dead local society and a live one. Berrien county growers did not unite, did not try to fight their foes, and they are in desolation. Allegan and Van Buren growers were alarmed; they combined and aided one another by study and relation of experience, and they have triumphed and are prospering. A live society means live peach trees.

Mr. W. A. Brown would not belittle the local societies, but he thought some of them were prone to regard themselves as of too much importance, ignoring the great benefits of the State and national organizations; and he paid a deserved tribute to the labors of President Lyon in his preparation of the catalogue of fruits. J. C. Gould, of Paw Paw, and Freeman Rice, of Lawton, attested the value of the work of their societies, particularly in checking the spread of the yellows. J. Lannin, of South Haven, spoke of the excellent results of his society in a social way.

The hour having arrived for adjournment, President Lyon announced the following committees previous to dispersion for the night:

Committee on Fruit—Emmons Buell, Kalamazoo; Chas. R. Coryell, Jonesville; J. S. Owen, Saugatuck.

Committee on Resolutions—E. W. Cottrell, Greenfield; W. J. Beal, Lansing; H. C. Sherwood, Watervliet.

On motion of Secretary Garfield, a committee was appointed to nominate vice presidents for the various counties in the State.

The President selected as such committee Messrs. James Satterlee, Greenville; J. B. Dumont, Allegan; A. C. Glidden, Paw Paw.

Wednesday Morning Session.

The resignation of Geo. Parmelee as a member of the executive committee was read and accepted, at the opening of the morning session, after which, upon request, the articles of association and by-laws of the society were read. The attendance was much smaller than upon the preceding evening, but before noon there was as great a number present.

The first topic of the session was

DESCRIBING APPLES BY THEIR FLOWERS.

Prof. Beal, of the Agricultural College, led with an essay.

He had examined the flowers of 100 sorts, some of them grown in localities seventy miles apart, and many flowers were examined for each variety, and the general average taken. Prof. Beal exhibited charts showing highly magnified representations of the petals and styles, the former enlarged to 20 and the latter to 50 times the diameter of the natural size. These parts of the flower varied much in the different varieties, while they preserved much uniformity in each sort. Some of the varieties were distinguished for their small petals, others for large ones; while the form varied from round to ovate, or oval, cordate, oblong, irregular, and with footstalks or claws. The variation existed to an equal extent in the styles. He thought the styles in apples were of all organs the most reliable for describing varieties.

Prof. Beal pointed out 22 distinct points or characters in all, derived from the flowers of apples. These will largely assist in determining varieties, the only drawback being at a time of year when the fruits cannot be seen.

President Lyon remarked that the discovery of Prof. Beal was of great value, and in a paper which he expected to read to the convention during the day he had taken occasion to refer to the same matter as it had been presented by the professor at Rochester, and with the suggestion that whoever would go further and determine peculiarities of leaf, twig and bark, so as to assist in the detection of varieties in the nursery row, would confer a great favor upon the purchaser of trees, and oftentimes enable him to save time and money. The great want among pomologists to-day is some means of detecting the fraudulent tricks of nurserymen and tree dealers, and, if information could be disseminated that would enable men who purchase trees to distinguish varieties, even of the leading sorts, it would be a wholesome check on the dishonesty of a large class of vendors of nursery stock.

Prof. Beal.—I have not attempted anything as yet beyond the flowers of apples, and I have found my investigations in what seems to be a very limited field, have taken a very considerable amount of time for a little accurate information.

Mr. Lyon.—To a considerable extent we even now determine peaches and strawberries by their flowers, and the glands in the peach leaf have for a long time been employed in designating varieties, but I can see there is a large field of investigation which will require an immense amount of work to develop; I am glad Prof. Beal has had the courage to lay hold of it.

Prof. Beal.—As regards the detection of varieties in the nursery by peculiarities of twig, bark, stem and leaf, I doubt whether we shall ever make any more marked progress than we have already attained, for I believe it is true in vegetable life as in the animal kingdom, that the different forms in their early stages of growth are so similar, as to exhibit scarcely any distinguishing characteristics. But at puberty the peculiarities develop rapidly, and I believe that in the flowers of fruits, we shall find a valuable assistance in matters of nomenclature.

Mr. Taylor, of Saugatuck.—Has Prof. Beal any record of the characters he has found in the flowers of different varieties, as established by other observers in other localities?

Prof. Beal.—No, I have not; in truth the field is new and there is no record of anything to compare with my own.

H. P. Hanford.—I think the scheme will fail as far as any utility is concerned, because of the variations caused by different soils and climate.

J. N. Stearns, Kalamazoo.—I am quite in accord with Mr. Lyon's thought that what we need most to-day is some means by which trees can be detected in their varieties with no flowers or fruit to aid one, and I would like to see the most minute description of all the leading varieties placed in the records of our transactions.

Emmons Buell.—I apprehend that with all the progress we are liable to make in this direction, we shall hear the horn of Gabriel before the people will acquire an amount of this kind of knowledge that will be of any assistance to them practically.

Judge Ramsdell.—I heartily endorse the last statement. I doubt if we shall ever make any progress in this direction that will be of practical utility. We shall have to depend, as buyers of trees, upon the "honest nurseryman" for our varieties. The leaves would be the best means of detecting the variety; but suppose I go into Mr. Lyon's nursery in midsummer, and with a perfect knowledge of varieties pick out my trees so as to have them true to name, what check is this upon him if he desires to cheat me? Even if I put a string

on every tree I want, or set a stake by it, how easy it will be for him to beat me when he digs the trees. A man who will cheat in this business under the present condition of things will cheat were we to have all the knowledge which Mr. Lyon or Mr. Stearns would like to have the buyers acquire.

R. F. Johnstone, Detroit.—We have side-tracked our discussion; let us get back on the main line. Prof. Beal's investigations are scientific; they relate to the acquirement of more knowledge of fruits through their flowers, and as a contribution to the science of pomology I deem his paper of vast importance. He has started off on a new track, and let us accept his facts as he gives them to us, nothing doubting. Facts will not hurt anybody. We will certainly get to using them by and by.

A. G. Gulley.—Some of us have misapprehended Prof. Beal's design in his paper. As I understand it, he does not wish to supplant our present means of detecting varieties, but add another point to help out on the more difficult sorts. We do not need this help on the ordinary, common sorts; these we know any way. But there are often cases coming up, which tax our best nomenclaturists to the utmost, and if by the employment of the peculiarities of flowers we can make an additional point in a sort, oftentimes the decision will be made with little difficulty.

Prof. Beal.—This is exactly what I am at.

Mr. Lyon.—I regret the lack of observation and thoroughness on the part of nurserymen. Growers, too, are too penurious to pay the nurseryman for the extra time and trouble he may expend upon a special sort. The careful, honest painstaking nurseryman is thus placed on the same plane with the careless, thriftless, often dishonest one.

Mr. Merriman.—In my observations, I have noted a great difference in size and form of petals, which would so complicate matters as to render a decision from these impossible.

Prof. Beal.—I do not rely upon petals so much as upon styles; and, of course, the same judgment must be brought to bear in the use of these as in other characteristics which we commonly employ.

Mr. Merriman.—Will it not require a good microscope, and skilled people to use it, to make this means at all available?

Prof. Beal.—An ordinary hand glass costing from fifty cents to a dollar will answer every purpose; and as to skill in its use this is as easily acquired as the use of the eye properly without it.

J. D. Baldwin.—Prof. Beal is on the right track; we must encourage and support him in this work; it is a new departure in a direction which I am certain will bring back to us good returns.

Prof. Beal.—I must confess I am astonished that my paper should have called out this discussion; I thought it would be considered a dry affair and be passed over without any discussion. The way it has been taken up is an encouragement to me, and I will go on and will report to you my progress from time to time; but I assure you it is slow business, requiring the careful inspection of so many flowers to establish a fact.

The next topic,

GRAPE VINE THRIPS,

was to have been led by S. B. Peck, of Muskegon; but the illness of that gentleman prevented the preparation of his essay. However, he sent a short article he had recently contributed to the Michigan Farmer, which was read to open the discussion.

MR. PECK'S EXPERIENCE.

This pest is getting to be in this neighborhood about equal, in the damage it does, to the phylloxera in France and California vineyards, or the codling moth among apple orchards here. None of the remedies I have tried seemed to have any effect. I have doubtless scorched the wings of some with torches, but instead of flying into the fire as they ought, they fly from it. The scent of burning tar and tobacco under them seems not even to disgust them. Drenching with tobacco tea, lime and sulphur solution, dilute carbolic acid, and even kerosene seems harmless to them. They are at their old haunts as soon as the scent passes off. I have hung strong-smelling herbs on the grape-vines; tansy, cedar boughs and even stramonium in vain; have tried concussion as has been recommended, by firing a gun under them, which simply astonished them.

The consequence is that the leaves fall off and the fruit fails to color or ripen, and where this occurs the vine is nearly or quite barren the next season. They have a preference for varieties like the rest of us, preferring first the Clinton and in the following order, Delaware, Iona, Adirondac, and other smooth-leaved varieties. Rogers' Hybrids, Catawba, Isabella, and others of large leaves and robust habits are better able to withstand this vital drain. The Concord, Hartford, and Ives are less affected, probably on account of the rough under surface of their leaves. What shall we do? Can any of the old vineyardists or any of the readers of the Farmer tell us? I speak not in behalf of myself alone, but also in behalf of my neighbors.

From all the other ills to which the grape is heir we are nearly exempt, when we plant on suitable aspects, and we are encouraged to think our soil and climate well adapted to this fruit.

Some one in the audience asked about the natural history of the insect and was answered by the following letter read by the Secretary from W. Asa Rowe, of Mason.

NATURAL HISTORY OF THRIPS.

The grape-vine leaf hopper, frequently miscalled the "grape-vine thrips," belongs to the family *Cicadellina*, order *Hemiptera*. The noticeable characteristics of the order *Hemiptera* are: (1st.) Their beak-like mouth parts, by which they are enabled to pierce the skin of animals or the tissues of plants and suck out the sap or blood upon which they live. (2d.) They have four wings, and of these the first two are usually (at least at their base), opaque and horny. (3d.) Their transformations are incomplete. The insect as it grows changes neither in form or habit, the only change being that it usually acquires wings when fully grown. The family of leaf hoppers have long legs, especially fitted for jumping, and are very active. There are several species which infest the grape-vine; but the most common one is the true vine-hopper, (*Erythroneum vitis*). Probably the others do not vary much from this in habits. The vine-hopper is a small, yellow insect, marked on the head and thorax with bright red. The front wings also are red at the base, and have a band of the same color across the middle, while the tips are black. The head is triangular, and the body is pointed. They hibernate during the winter under leaves, weeds, and other rubbish, near the grape-vines. As the weather warms and the vines start into new life in the spring they come out and lay the eggs for a new generation, so that the young are hatched and ready for business about as soon as the leaves are out for them to work on. They moult

several times before attaining their maturity, and their cast-off skins may be seen as white specks on the under side of the leaves where they were left. There are several broods during the season. In fact there is no distinct line of division between the various broods, and they may be found in all stages of growth at the same time and on the same vine. They are easily alarmed and very sprightly, so that, feeding as they do on the under side of the leaves, even though there are none in sight, yet when we pass among the vines a cloud of them hop out from their unseen retreat and disappear, we hardly know where, but the withered leaves, whose very life they have sucked away, tell us the whole story.

Judge Ramsdell.—I know the little fellows and have had my tussle with them; Mr. Rowe's description is accurate. With me they attacked the Rogers' Hybrids the most, would even pick them out among other vines, leaving the Ionas and Hartfords untouched.

Mr. Stearns.—It is right the opposite in my experience; they attacked the Ionas in preference to any other varieties.

Mr. Hanford.—With me they attack all varieties indiscriminately; but a young man in my employ conceived the idea of using the sulphur bellows and dusting the vines with hot pulverized lime. The process was effectual. The thrips left. Several applications are necessary, but it is not expensive. A man will go over 10 acres in three days.

Mr. Merriman.—I have been successful with anything caustic, like soda, or even soft soap. A decoction of tobacco I have employed successfully, made by steeping the refuse of tobacco shops. It requires several applications. It is the sly propensities of the little pests and their method of hiding that saves their lives, so it is all important to make any process thorough.

Thomas Petty, Spring Lake.—I have had my trials with these tormentors. I have used whale oil soap; I have raked up the leaves and burned them in the fall, in truth tried everything that has been suggested for their destruction, or to scare them away. After failing with everything I was turning the matter over in my mind one night, when I hit upon the plan of catching the little fellows. I took common wall paper of good quality and stretched it over a rectangular frame, giving it a coat of sticky coal tar. Then taking a day when the wind was blowing a little, across the rows of my vines, I placed this in the second space on the windward side and scared the thrips over from the first row. It was a great success, my paper was soon so covered with them that it needed another coat of tar. This plan has the advantage of giving you the satisfaction of seeing your enemy caught. When they strike the tar *they are there*—you have them caught.

Geo. Seagrove, Spring Lake.—I can endorse Mr. Petty's statement; after trying everything recommended, I followed his example and succeeded in conquering the pest.

Mr. Lyon.—It is a good plan to stir over the rubbish that may lie in the spaces of the vineyard over winter, and the little fellows hibernating there will die from exposure. This would be good as a preliminary step to Mr. Petty's plan.

The next topic for discussion taken up was:

DISTANCES APART FOR PLANTING FRUIT TREES AND PLANTS.

Mr. Emmons Buell, of Kalamazoo, led the discussion by remarking as follows:

The distance apart which fruit trees and plants ought to be placed should be that which will produce the most perfect development of tree and plant, for the purpose of securing to us the greatest amount of superior fruit; and for these purposes my experience and observation would induce me to place them about as follows, with, perhaps, a little variation one way or the other, as they might be vigorous, spreading growers or of a more contracted habit of growth: Apples 30 feet apart, peaches 20, pears 20, plums 20, blackberries 6x4, raspberries 5x4, strawberries three feet by fifteen inches, and grapes 8x8 feet. These measurements might be varied according to soil and modes of culture.

Mr. Ratcliff, of Richmond, Ind., a representative from the Indiana Horticultural Society, told of apple orchards planted 34 and 20 feet apart, but neither, because of improper culture, was successful.

S. M. Pearsall, of Grand Rapids, planted 22 feet apart, but they failed—grew too high. He tried another, 32 feet apart, and succeeded. He would recommend 20 feet apart for peach trees. He trimmed his apples so he could stand and place his shoulder against the first crotches.

Levi Loomis, of Ganges, said that on the lake shore each man had his own ideas about this matter. He had planted part of his orchard (apples) and set two rods apart. They had done well, but were now too close, as some of them extended 20 feet from their trunks. He recommended 40 feet as the right distance for most soils. Sixteen feet was sufficient for peaches, when they are properly pruned and shaped.

Mr. Buell said different varieties, because of their varied habits of growth, permitted the use of various distances.

J. C. Gould, of Paw Paw, thought thirty feet a sufficient distance.

Mr. Lyon said forty feet was not too much for such varieties as Baldwin and Greening, while it would be folly to waste so much space as this for the Lady apple and the Pearmain. Something depended upon pruning, too.

Mr. Hanford spoke of planting apple trees forty feet apart with peaches between, the latter being removed as the apples grew large. This had been successful.

J. D. Baldwin, Ann Arbor, said he planted apples and peaches thirty feet apart, one orchard along side the other. With his method of cultivating peaches upon his heavy clay soil, he saw no other way of doing the work properly. He cultivated with a single horse a good many times over during the season,—the number of times depending on the amount of dry weather.

Mr. Hanford remarked that roots had more to do with distance apart than the tops. Trees that throw their roots well away from the trunks need more space.

The subject next placed before the convention was:

SCALE OF POINTS IN JUDGING FRUITS AND ORCHARDS.

Secretary Garfield introduced the subject by referring to an incident of his school days, when the teacher adopted a scale of points, giving a certain number to lessons, another number to punctuality, another to deportment, the whole summing up 100 points. The pupil who stood the highest was to have a

prize. By some maladjustment of the figures the prize, according to the scale of points adopted, was given to the boy who always had good lessons but was the most troublesome pupil in school. The secretary intimated that he was the boy who took the prize, and asked the question, whether the danger of making such an error was not great enough in adopting a scale by which to judge fruit and orchards to render its use a misfortune?

President Lyon was reminded by the incident of another which was said to have occurred in connection with making awards upon orchards by one of our own committees some years since, when the first premium on an apple orchard went to an orchard planted as stocks upon which to graft some market variety, the grafting not having been done.

Judge Ramsdell.—In judging fruits I would have but one point, and that an answer to the question each committeeman should put to himself: "If I were going to buy, which would I take?"

Prof. Beal.—I like that; and still I would have a scale in mind to aid him in answering the question of which he would purchase.

Mr. Coryell, Jonesville.—I would certainly have a scale of points in mind when judging fruits and orchards, but this scale must be elastic and vary with locality and purpose. In other words, one must have an ideal type and its characters before him when he passes judgment, as a measure.

President Lyon had great faith in a scale of points when properly adjusted, and thought we might attain to it, but it might be required to have a separate scale for market and for family and dessert fruits.

Judge Ramsdell said the logical outcome of this would be a scale of points for each fruit, and one must be bristling with points to suit all circumstances and varieties.

Mr. Stearns doubted if a scale could be made that would be at all available with collections of fruits.

Mr. Johnstone said the term "scale of points" could not properly be applied to characters of fruits; it was a misnomer. The description of samples that are types, as given by Downing, Warder or Thomas, is all the assistance one needs in passing judgment upon fruits. The question simply will occur, upon how near the specimen in hand approaches the ideal?

So thought Mr. A. G. Gulley. Apples are distinct in their characteristics, and he thought a scale of points applicable to all varieties, was impossible.

Mr. Buell thought a scale nothing less than an incumbrance to a committeeman, and Judge Ramsdell's test was the best one possible.

On motion the society took a recess until half-past one o'clock.

Afternoon Session.

Before proceeding with the regular order, upon request, Judge Ramsdell described his fruit-house, which was, in brief, a building provided with a filling of sawdust between the outside and the sheathing. Next was a space filled with ice, and the fruit, stored in the inner rooms, kept till July 1st, having been put in at spring-time. When put in, the fruit was worth only fifty cents per bushel, but he sold it for \$1.50 when he took it out. Peaches were kept equally well.

The society next listened to reports of committees, and Superintendents at State Fairs and other officers.

The first paper received was the

REPORT OF THE APPLE COMMITTEE.

To the Officers and Members of the Michigan State Pomological Society:

The Committee on Apples, at the Horticultural Exhibition connected with the State Fair at Detroit, were instructed to supplement their report with "remarks." Doubtless you did not reflect on your liabilities, but you can't complain if we scrupulously confine ourselves to what, with a liberal interpretation, may be ranged under the head of

REMARKS.

We judged the apples—the exhibitors and the public judged us. We don't appeal from the jurisdiction, or hope to escape sentence, we merely plead mitigating circumstances. We took considerable pains (after our appointment), to keep ourselves from getting demoralized—avoided conversation with our wives on their return from the sewing society; didn't mingle much in church quarrels; abstained from horse-trades and sleight-of-hand in packing apples; didn't make much of a run for office, and scarcely talked politics, except to tell a weak brother, who was evidently going over to civil service reform, that he musn't do it, unless the democrats should get control of the custom house gang.

After undergoing a sort of quarantine we entered upon our duties, resolved to be discriminating and just or die in the attempt,—we didn't die, but we were bothered. You see how it was: here was an apple with a worm in it, there was an apple with another kind of worm, excellent of their kind, which was best was a matter of taste, and tastes are somewhat allowed to differ—but we had to bring in a verdict, and the fellow who didn't win was mad of course. Take another case—here are several plates of Pennocks, a large brilliant red apple, delightful to look at, but just about as worthless as a handsome bejeweled miss who don't know how to do plain cooking. A sensible, conscientious critic, on the principal "of two evils choose the least," will put both hands on his heart and give all the premiums to the very smallest Pennocks, but it will make a row and the public will side with the big Pennocks. Take still another case: Here are several exhibits "as near alike as two peas," no body but the owners can see any difference; and still another, where each have special merits offset by special demerits—the more the committee cogitate the doubtfuller they get, and when in very desperation they bring in their verdict it is plain to outsiders that they were bribed, and would gladly have perjured themselves if they could have got themselves sworn.

Committees, in all their tribulations, can depend on the moral support of the first premium fellows; they stand by us, right or wrong, through thick and thin. They know our decisions are right and were honestly rendered. There isn't the shadow of a reason why they should have been different. Second premium chaps are apt to be a little mad at first, but they rather defend us after considering how much better off they are than the rest of mankind.

Of course it would put us ahead some to give the premiums to those who can make the most noise, but the caterwauling capacities of men are not easily estimated; after being "as wise as serpents," we are "as defenseless as doves." The trouble comes from the multitude of exhibitors; we make ten mad where one is pleased—just as Governors and Congressmen do when they distribute the offices—so you see the chances are against us from the very start, and the best

that the committeemen can do, even if they are tolerably honest, is to go to bed sober and reflect that better men have fared a good deal worse.

THE DETROIT EXHIBITION

was every way creditable to the society under whose auspices it was made, and to the fruit-growers of the Peninsular State. The chairman of this committee, residing in the State of New York, and familiar with its fruit exhibitions, has seldom or never seen it excelled. This is in every way encouraging, since the enterprise and enthusiasm that made so fine a collection will not fail to make the most of eminent and obvious advantages. Though only one in our galaxy of States, Michigan, is larger than kingdoms that have ruled the world. Your surroundings give to you ample territory, wonderful diversity and capability. This diversity of soil, climate and situation enables you to grow a great variety of products and to grow them in great perfection. Here a very important consideration suggests itself: Farmers, fruit-growers and gardeners should take unwearied pains to find out what, under their peculiar circumstances, they can grow best. There is no rood of ground on the face of the earth but can grow some one thing better than it can anything else. Precisely our first business is to find out what we were made for, and what our soil was made for. Special advantages are lost by putting things in the wrong place. Only by getting the right thing in the right place can we achieve full success. We may want a great many things, and a great many things may be wanted in our neighborhood, but that is no proof that we are to grow them. Commerce is admissible. If farmers would keep minute and accurate accounts with their several crops they could tell after a few years which give them profit and which loss. To bring this matter nearer home, if you, gentlemen of the Michigan State Horticultural Society, will keep accurate accounts with your orchards you will find that certain apples, pears and grapes that you cultivate bring you loss, while other kinds give you handsome profits. Or perhaps your apples pay and your grapes run you in debt. Of course we all try to find profitable sorts, but do we go to work in a business way, keeping accurate accounts with individual trees, and do we promptly put away the poor ones when we find them out? Perhaps you do, some of us do not.

The warm quick soils of Southern Michigan would seem to be adapted to peaches, grapes, summer and winter apples.

LONG KEEPING APPLES

grow slow, and they should not mature till cold weather takes them in charge. Northern Michigan would seem to be adapted to late keepers, and if so, why not make a specialty of them? Why not give the early trade to the South? There is reason to believe that sections capable of producing late keeping apples in perfection will find it to their advantage in giving almost exclusive attention to their cultivation. The apple is the chief fruit in the temperate zone, and no zone can furnish its superior. The late keeping varieties are permanent, for they give us fresh fruit when other fruits retire. Summer and autumn furnish a profusion of delicacies—hidden by the herbage under our feet, growing on the prickly bush, pendant from the training vine; suspended on drooping branches in summer sun are forms and flavors marvelous and matchless, but they do not stay! When winter has drawn us into our abodes, when spring with its relaxing warmth has come—welcome, thrice welcome, the rich substantial Swaar, the sprightly well-ripened Bellflower, the crisp, peerless

Spy! Much of comfort and much of health can we derive from these friends that stay when other friends depart. If well grown and well cared for they come slowly to maturity, while outside vegetation shrinks and withers before the blast—they are nature's recompense for nature's roughness. The area in which these long keepers can be cultivated with eminent success, as compared with the rest of the globe, is very limited, and can scarcely furnish an over supply.

We have not, as fruit-growers, done our duty when apples sell for five dollars a barrel, or sixty cents a peck, in the month of April, in the city of Detroit. There ought to be—very bad seasons excepted—a full supply at half those prices, and there will be when Michigan fruit men do their duty. Prices are enhanced and profits greatly reduced by the loose and careless methods of growers and dealers. It is claimed that workmen ought to thank God and the corporations for “a dollar a day,” but that don't put much science into their heads, or many apples into their stomachs in spring time. As patriots and Christians we ought to strive with unwearied diligence to cheapen prices while we increase our profits. When we know all that can be known about fruit growing, and practice what we do know, fruits will be cheaper and our profits greater. Economy in production cheapens prices, increases the demand and enlarges sales. Immense losses lately occurred in the State of New York, and probably elsewhere during the hot weather in autumn. Greenings headed up tight, kept in the sun or stowed away in hot places, with the thermometer at summer heat could not help rotting—the loss comes in the end mainly out of the grower; the consumer is oppressed by high prices and the market curtailed.

The points we make are:

First.—Each locality is especially adapted to a particular product, which should receive special and sometimes almost exclusive attention.

Second.—We should drop out of our lists all but the most profitable varieties, to be ascertained by close and careful estimates. As we exhaust elements of fertility our Provident Parent put into the soil, and fail to restore them, varieties that once gave a small profit now give a larger loss. What pays in one place, removed a few rods won't pay at all. This points out, in our judgment, precisely the way in which fruit-growers are making their greatest mistakes. Their chief error is in persisting to cultivate unprofitable varieties. Exhibitors are to educate and gratify the public, and we do not complain that the visitors at the State fair were allowed to look at a large collection of fruit; we concede that a State so diversified as Michigan may find places for many varieties, but should make haste and find where they belong and keep them there. We need not raise all we require for home consumption. Exchanges are every day easier to make. If we can swap to advantage, let us swap.

Third.—Late keeping apples, coming when there is no other fresh fruit, are especially entitled to consideration. Territories peculiarly adapted to them “should mind their own business,” and leave other fruits to sections that find profit in looking after them. Late keepers in this country and abroad, can find an almost unlimited market at reasonable rates—rates that will pay those that can grow them to advantage.

Fourth.—Improved facilities for drying and otherwise preserving summer and autumn fruits, will vastly increase their use, making their extended cultivation necessary and profitable, and hasten the good time coming, when the gardener will be ahead of the butcher as “before the fall.”

Fifth.—Grapes are second only to apples in importance. They grow wild

from sunrise to sundown, which proves that some of their varieties are suited to every clime—they reward the best of attention, are entitled to a good place, but they are vastly accommodating, will get out of the way if they can, find you when you are hungry, making a better dessert than your wives can (and they are undoubtedly smart), and will cure you when you are sick better than blue pills. Some of the grapes at the fair came before this committee, and they afforded welcome evidence that Michigan is awake to this great interest.

Sixth.—This committee will not undertake to decide which fruits are best suited to Michigan, but would remind you that the very best in quality give small yields; if the public want a good article they ought to be willing to pay for it. The difference between Spys and Baldwins is greater than the market indicates. The Wagener and the Spitzenburgh must in New York be abandoned unless buyers are willing to buy apples on their merits. Are people of good taste willing to part with our best fruits rather than pay the cost of raising them? A Wall street banker will give two thousand dollars for diamonds that common folks can't distinguish from such as can be bought for a thousand dollars, but he will eat second quality apples all his life rather than pay a dollar a barrel more for first quality. This ought to be corrected. The fault is a good deal with the dealers who frequently make more difference when they sell than when they buy.

Seventh.—For market purposes our whole business is to inquire what pays best—the seller doesn't eat the apples. If you have fools for your customers, and probably you have, give them what will give you the most money, and if it puckers their mouths you needn't scowl over it. In New York, in the opinion of the chairman of this committee, Baldwins can be grown for less than half the price of Primates, Bellflowers, Spitzenburgs, or any strictly first quality apple. Will not the Michigan Pomological Society undertake to determine, as near as may be, the relative cost of growing our leading apples?

Eighth.—The codling moth and other insect enemies are the chief hindrances to fruit growing, and every grower should give his best energies to their suppression.

Ninth.—In awarding premiums on market varieties, we gave the preference to those that were smooth, looked well and were of good size, though we consider very large fruit objectionable. Extra large size is a merit in a Rambo or a Seckel, and a defect in a Pound Sweet or a Duchess. Unusual size somewhat indicates loose texture and deficient flavor, and when barreled these apples are more bruised by pressure on fewer points of contact.

Tenth.—In awarding premiums for family use we would wish to do full justice to quality. The best fruit is most subject to insects, but we are allowed to hope that we shall be able in the future to grow good varieties successfully, as in former times.

The chairman of the committee would express his personal thanks to the officers of the Michigan Pomological Society for their many courtesies to him, and express the hope that the association they represent may be abundantly successful in its efforts.

HUGH T. BROOKS, Wyoming Co., N. Y.
C. R. CORYELL, Hillsdale Co., Mich.

REPORT OF COMMITTEE ON PEARS AND PLUMS.

To the President and Members of the Michigan State Pomological Society:

GENTLEMEN—As chairman of the committee appointed at the State fair last September, to award premiums in divisions F, G, K and N, embracing collections and plates of pears, plums, quinces and cranberries, I would report as follows:

There were in these various divisions 289 entries, embracing 450 plates of fruit, of which there were 158 single plates of pears, 98 of plums, 8 of quinces and 1 of cranberries, besides 17 collections of pears and 7 collections of plums. These were entered by 37 exhibitors, of whom 9 were from Detroit, 8 from the West Shore, 3 from Grand Rapids, and 17 from various other parts of the State. Twenty-two exhibitors received premiums, of whom 6 were from Detroit, 6 from the West Shore, and 10 from other points.

Of the total number of entries, 31 were from Detroit, 146 from the West Shore, and 112 from other points. Of the 40 first premiums awarded, 4 went to Detroit, 21 to West Shore, 7 to Kalamazoo, and 8 elsewhere. Of individual exhibitors, I will name only a few of the largest. Mr. E. J. Shirts of Shelby, Oceana county; the Oceana and West Michigan Pomological Society, which he represented, and Mr. C. A. Sessions, of the same county, were the principal exhibitors of plums, besides showing largely of pears. Together they made 122 entries in these divisions, or more than a third of the whole number. Of these 10 were duplicates and 25 were not put up owing to lack of space. This left 91 competing entries on which they received 17 first, 14 second, and 2 third premiums, a total of 33 premiums out of 85 awarded.

In pears, the chief exhibitor was Mr. Stearns, of the firm of L. G. Bragg & Co., of Kalamazoo, who made 22 entries, and received on them 7 first and 8 second premiums. There was no third premium stuff in their display. Mr. F. M. Benham, of Olivet, took the first premium for general collection of pears, and Mr. H. B. Chapman, of Reading, for family collection.

Mr. Philo Parsons, of Detroit, showed a number of fine plates of pears, but it was reserved for Mr. H. C. Engle, of Detroit, to show a plate of Flemish Beauty pears which, for perfect excellence in all respects, surpassed anything else in the hall, or which I remember to have seen at any of our previous exhibits. They were very large, but not monstrous, being exceeded in size by several other plates shown. They were uniform in all points of color, size, shape, etc. The shape was perfect, their stems were unbroken and they had no worms or blemishes of any sort. They were plump, firm, bright. There were just five of them—no excess, none lacking, and they were properly named, entered, labeled and placed, and altogether it did your committee's heart good to look at them. This plate was my ideal of what exhibition fruit should be—something to stimulate ambition in other growers, and to advertise our State by showing the pre-eminent excellence of its products.

I wish to enter my strongest protest against the prevalent practice of exhibiting commonplace stuff at our fairs. Much of the fruit submitted to our criticism was wholly unworthy of public display, and only served to cumber the shelves and prevent the better fruit from being seen. Wormy, scabby, stemless or undersized fruit ought to be excluded from our shelves even by edict of the society, if not by the good sense of individual exhibitors. Is it not possible that we indirectly invite such stuff by offering second, third, and

even fourth premiums, thus leading exhibitors to hope that if committees refuse a first premium, they may give the consolation of a lower one? In several cases where we judged the displays unworthy, we have refused even the lowest premium, and in others have given a second or third premium where we thought a higher one not merited.

Thus of the \$154 for which there were competing exhibits properly entered and placed, we refused to award \$26.25, or a little more than \$1 in six, on account of lack of merit.

As an indication of the relative success and popularity of some of the leading varieties of pears and plums it may be of interest to give the number of single plates of each.

There were of pears, 20 plates of Bartletts, 17 plates of Flemish Beauty, 13 plates of Louise Bonne de Jersey, 11 plates each of Sheldon and Duchess d'Angoulême, 8 plates each of Seckel and Beurré d'Anjou, 6 plates each of Onondaga and White Doyenné, 5 plates each of Winter Nélis and Beurré Clairgeau, 4 plates each of Beurré Diel and Fondante d'Automne, better known perhaps as the Belle Lucrative.

Of plums there were 10 plates of Lombard, 5 plates each of Washington, Yellow Egg, Imperial Gage and McLaughlin, 4 plates each of Damson, Cole's Golden Drop, Smith's Orleans, Jefferson, Sheldon and Prince's Yellow Egg, 3 plates each of German Prune, Duane's Purple, Bradshaw and Red Magnum Bonum.

In our last premium list are some rules which need modification, viz., rule 6 on p. 90, and the note on p. 92, which instruct committees to exclude all *unnamed* or incorrectly named specimens. This should be made to read *unlabeled* or incorrectly labeled specimens, and should be so expanded as to require with all collections a correct written list of the varieties included, and these should be given in the order of their ripening in all cases where succession is one of the points to be considered. The lists should be copied into the committee books and subsequently published with the awards. Without such lists much more than half of the value of the society's labor is lost, for rule 2d, p. 92 of the premium list truly says: "That the true or legitimate purpose of the premiums offered (for collections) is to draw out the views of both exhibitors and committees as to the relative values for the purposes specified of the varieties included in these exhibits;" and accordingly, in the note heading that page, committees are instructed, after excluding wrongly named or unnamed fruit, to consider first or all the value of the *varieties* for the required purpose. Of what use is this unless the lists are to be published? Do you say that this is the proper work of the judging committee? Possibly they are the ones who can do it most conveniently, but if this work is to be included in their duties it will be helpful to facilitate their work for them more than has yet been done.

I should have been glad to have presented to you complete lists of the various collections, and to have discussed the various merits or demerits of each, but as you will see by looking near the bottom of p. 89 of our last premium list, Awarding Committees have just one day's time in which to do their work. Possibly this would have sufficed had the decision of the Executive Committee in 1878 been carried out, which decision was to have an assistant superintendent for *each* division of the premium list, who should have special charge of it during fair week, and be chairman of the Awarding Committee for that division. Instead of this we were, without previous notification, pressed into service at the last moment and given four divisions upon which to pass, and

earnestly urged to take six. Naturally we were "rushed," and it was only when too late that we had time to think of the importance of saving the hurriedly scribbled lists which we made for the purpose of passing judgment and successively threw away as that was done. Lists prepared as I have suggested would have been preserved and have greatly assisted our operations.

Most of our exhibitors, coming to the fair with a varied lot of fruit intended to compete in several, many or all of the different divisions, insist very strongly on having all of their fruit together, so that it may make a fine advertisement for themselves and their locality, and so that they can the better watch over and take care of it. This method of arrangement, or rather non-arrangement, is much easier than any other and takes less room; but of what use is it when accomplished? A large and general collection of fruit intended to advertise a locality is all very well and has its proper place along with other similar collections, but it has no business with duplicate plates intended to compete in other classes or divisions. They should be taken out and put where they belong.

Visitors and awarding committees have much the same needs in this respect. Either one comes into the hall with his premium list or his committee book, as the case may be, wishing to see and compare varieties with varieties or classes with classes. He does not wish to see whether Mr. A. has brought several barrels of fruit or merely one or two plates full; but he does wish to see their merits compared, not with somebody's fine display of grapes which may chance to be alongside, but with other entries of the same kind. The interests of the exhibitor as well as of the visitor and committeeman all lie in favor of the most thorough classification and arrangement. Without it, it is impossible but that the committee should fail to find and pass upon many of the entries.

This was the case at Detroit, the chief trouble there which prevented a proper arrangement of the exhibits being, besides the persistent opposition of some of the exhibitors, the insufficiency of the space allotted to us by the Agricultural Society. For future exhibits we must insist upon space enough to place all of the entries systematically and advantageously, for without it one might as well go into the fruit market as into the Pomological Hall to secure an opinion as to varieties and localities.

Another need is a large number of uniformed and duly authorized police who can be at the disposal of the society's officers and see that the fruit is duly protected without the presence of the exhibitor. We cannot require, as we do in rule 11, p. 89, that all articles must be placed entirely under the management of the officers of the fair unless we can give exhibitors reasonable assurance that their property will be protected. This done, exhibitors should be allowed no more right to handle their fruit or go inside the railing, after it has once been placed, than any other visitor has. This will give committees a chance to go about their business rapidly and free from much interference to which they are now subjected.

One more suggestion, and this too-long report will come to an end: Should not the committee on nomenclature begin its work as soon as the exhibits are placed, and, as far as possible, go before the awarding committees? Otherwise, by the rules, each awarding committee becomes practically a committee on nomenclature, as they are required to exclude all incorrectly named specimens. A worse result of delayed action by the committee on nomenclature is that incorrect labels and entry cards bearing the society's name are left to mislead and mystify unskilled visitors who have come to learn, and thus receive a false les-

son. If it is desired to base the award in some measure upon the correctness or incorrectness of the exhibitor's own labeling it would be easy to indicate on the entry card such cases as the committee on nomenclature have corrected.

All of which is respectfully submitted.

HENRY G. REYNOLDS,
Chairman.

REPORT ON CANNED AND PICKLED FRUITS, ETC.

To the Michigan State Pomological Society:

When we take a survey of the infinite provisions of God (nature) for the happiness, not to speak of the necessities of the human family, we can but exclaim, how good, and how bountiful is our Divine Father. No finite being could have devised or conjectured the variety of the good things that have been provided for the comfort and happiness of the animal kingdom, and surely not among the least of these blessings, but among the greatest, we must record the endless variety of fruits. Indeed, had our Father had reference to our necessities only, no other provision need have been made for sustenance than the endless supply furnished us of fruit. It has been said that man should not live by "bread alone." But it could be said that man could live on fruit alone. It embodies the properties in itself to support both animal and intellectual life, but when given with the other liberal provisions for the sustenance of man, it does not lose its importance. It is nourishing, invigorating and exhilarating. If the apple were really the forbidden thing, we could almost forgive our first mother of her transgression, for which of us now living would withhold our hands? I fear but few, if any. Its very appearance inspires a disposition to embrace, but when once tasted its delightful flavor and exhilarating properties would sweep away the last barrier and we too, I fear, would violate the command, "Thou shalt not eat of it." While we denominate the apple King, there are so many honored members in the royal cabinet, I will not name any but the head. No home is complete without a variety of fruits attached. Husbands are made more generous, wives more cheerful, and children more happy. We are now wont to treat fruit as a luxury, but could and should it not be made at least to approximate more nearly to a standard article of food. Its evanescent nature should prompt us to the greater activity in its preservation. Truly, great advances have been made within the last few years for its preparation, but is there not very much that can yet be developed by science and industry looking to that end? Is it not possible to preserve it in a normal state for an indefinite period of time? It would appear from its importance that such a discovery should be looked for. While few or none are found that oppose a public exhibition of fruit as a stimulus to its culture, it is a lamentable fact that very many yet neglect this delightful occupation. All love and admire fruit, but many are deprived of it by their own needless neglect. What can be done to inspire a greater and more general growth of this most bountiful gift of nature? Would it not be wise for our societies to put into the field traveling agents that would deliver in consecutive towns, lectures on the subject, and thereby move the thoughtless and negligent to activity. It would involve increased expenditure, but would not the increased number that would attend our fairs so increase our receipts as to meet the outlay, and could not a more attractive mode of arranging fruits at our exhibitions be devised? Could not the shelving be constructed in recesses,

say for cheapness in the form of a V, so that every article could be approached by the viewer? Have the shelving open so as to admit light, and slightly (not rapidly), inclined backward; have a small opening at the lower end of each stand for the convenience of those in charge. And for the canned fruits, pickles, jellies, etc., we would suggest a form after the plan of the revolving book-case, with adjustable shelves. I can but think that something of this sort would give far greater satisfaction to the viewer. As usually arranged, very many articles are so remote as to be nearly lost sight of.

MRS. O. C. ABEL, *Chairman Committee.*

REPORT OF THE SUPERINTENDENT OF FRUITS.

Mr. President and Members of the Michigan State Pomological Society:

In conformity with the by-laws of the society, I herewith transmit my annual report as superintendent of fruits for the year 1879; and may I say that the unanimous expression of the Executive Committee in appointing me a second time to the position, made the work more pleasant and agreeable than it might otherwise have been; yet many times did I keenly feel my incompetency to perform the duties devolving upon one having charge of an enterprise in which the fruit-growers of Michigan feel and manifest such deep interest. But with the assistance of many kind friends, and the long enduring patience of exhibitors, we were enabled to partially fulfill the responsible duties assigned us, and most sincerely hope that our efforts have not been in vain.

This, like all other work, calls for preliminary arrangements, and accordingly in August, I sent letters of inquiry to all parts of the State with the view of ascertaining the condition of the fruit crop, and to whom, if possible, we could look for assistance in making the annual show at Detroit. The few replies received invariably gave discouraging prospects which led me to the conclusion that the exhibit would be light, particularly in the apple department, and not until the week before the fair did any thing occur to change my mind; when numerous applications for space served in part to remove this impression and before the close of the second day of the fair our hopes of a large exhibit were fully realized. If we were to base our opinion of the crop in Michigan by the amount of fruit in the hall we should say it was unusually large and of superior quality. What has been said of the apple can also be said of other fruits, all being unexpectedly well represented both in the green and preserved state. It is not my intention to make special mention of individual collections as the viewing committees, before commencing their labors, promised to make a full and accurate report of every thing exhibited in their departments. Suffice it to say, that the general display, taken as a whole, was much too large to be fairly shown in the space allotted to our use, and notwithstanding the manifest anxiety of the agricultural society to give ample space for every thing put on exhibition, the capacity of the old hall in connection with the large addition was found to be much too small to accommodate exhibitors whose contributions aggregated more than four thousand plates of very fine fruit. Of this number about two thousand plates set in a conspicuous place on the lower shelves; five or six hundred occupied the upper shelves and were nearly all hidden from visitors on account of their extreme height, causing the committee a vast amount of trouble to get the varieties together for inspection; about 500 plates were heaped upon the floor or platform entirely monopolizing all the space designed for exhibitors and com-

mittees to do their work; and at least enough fruit to make one thousand more plates had to remain in the packages for the want of room to put it up. Thus it will readily be seen that about one-fourth of the time spent in picking, packing, and preparing fruit for exhibition was labor lost, besides being the cause of great disappointment to many who desired to make a large exhibit and capture the awards.

By resolution of the executive committee, which met in Paw Paw Dec. 2d, 1878, the superintendent was authorized to secure, if possible, the services of some one from abroad to act as chairman of the apple committee. Accordingly correspondence was opened with several parties, one of the number being Hon. Hugh T. Brooks, of Western New York, a prominent horticulturist of that state, and who was the first to accept the position, with no other compensation than the necessary expenses for the trip to Detroit and return. Notice was sent him that his labors would commence on Tuesday, the second day of the fair, and prompt to the hour, Mr. Brooks put in his appearance and reported for duty, as did his associate, Mr. C. R. Coryell, of Jonesville, Hillsdale Co., Michigan. This committee at once assumed the responsibility of examining all the apples in every division on exhibition, and, as soon as the necessary preliminary arrangements could be made, commenced their work. The unfavorable arrangement of the hall prompted me to accompany them, and assist as much as possible by pointing out the exact location of each division and entry, in order to make their task as light and pleasant as circumstances would permit; for, notwithstanding our effort at the outset to keep each division, class and variety by themselves, the lack of room compelled us to place them in a haphazard way in all parts of the hall. This made their work more laborious, and consumed much more time than we intended it should, yet the committee, true to a sense of duty, faltered not, and after a protracted season of nearly two days surrendered the books and pronounced their work done. And we will add well done; for among the long list of exhibitors not one sent up an appeal or intimated that justice had not been done them.

The other committees on fruits were made up of experienced fruit growers of Michigan, and, like the former committee, found a great amount of labor to perform, each doing their work in shorter time, but equally as well.

Believing that woman's work can better be performed by women than by men who hold the plow, it was thought best that division O, dried fruits and vegetables; division P, canned and pickled fruits; division Q, preserved fruits and jellies, should be put under their charge. By mutual consent the following committee was selected to examine the two hundred and sixty entries in the above divisions: Mrs. O. C. Abel and Mrs. S. A. Cady, of Wayne; Mrs. E. F. Guild, of East Saginaw.

Of this committee I cannot do more than say that in performing their duty they proved themselves equal to the emergency. The show in this department was far better and the competition much more spirited than we had any reason to expect. Here we found all kinds of fruits and vegetables either dried, canned, pickled, preserved, or made into jellies that could be found in this beautiful State of Michigan. Not only were the specimens especially beautiful to look upon, but, judging from the looks, delicious to the taste. In this department the commendable rivalry that was manifested bespoke a day not far distant when faithful hearts and willing hands shall place upon our tables much finer delicacies than we have yet seen.

OUR CLASPS AND PLATES.

Since our organization two great needs of the society, have been suitable plates to show fruit on, and clasps for cards or labels. At first we knew no other way than to get a supply of plates from the crockery stores in places where exhibits were held. This, in nearly all cases, was attended with great expense, particularly at the State fair, where the amount paid for the use of plates, drayage to and from the fair ground, and breakage, would aggregate \$40 to \$50 per year. To save this expense the society, some four or five years ago, purchased five thousand paper plates, which did not fill the want to the satisfaction of those who used them. Therefore, in 1877 the executive committee decided to get something better if possible, and a committee was appointed to look up the matter. After conducting a long correspondence with many parties east and west, the place was found where they could be obtained, and by request samples were forwarded for inspection, the result of which is that the society now owns four thousand japanned tin plates of various sizes, from 6 to 10 inches in diameter. These plates are easily cared for and can be transported from one place to another with little expense. The clasps were not as easily obtained, and not until this year could anything within the limits of our finances be found. After two years' experience with the plates and one with the clasps, I am satisfied we have a neat, cheap and durable article that exactly fills the wants of the society.

By action of the executive committee the secretary was authorized to take charge of the plates and clasps belonging to the society, which has been done so far without loss; but as losses by fire occur when we least expect them, we would recommend that he be instructed to get the property of the society insured.

Lastly, in closing this report, permit me in behalf of the Michigan State Pomological Society, to tender many thanks to Hon. Hugh T. Brooks, of western New York, and C. R. Coryell, of Jonesville, Michigan, who acted as committee on apples and collections of grapes; to Eli Bidelman, of Lansing, and E. H. Reynolds, of Monroe, committee on special exhibits of peaches; to H. G. Reynolds, of Old Mission, F. W. Noble, of Detroit, and Thomas Love, of St. Joseph, committee on divisions F, G, K and N; to H. E. Bidwell, of Plymouth, and Chas. W. Wilde, of Berlin, committee on single plates of peaches; to E. F. Guild, of East Saginaw, C. W. Robinson, of Detroit, and A. G. Gulley, of South Haven, committee on single plates of grapes; to Mrs. O. C. Abel, of Wayne, Mrs. S. A. Cady, of Wayne, Mrs. E. F. Guild, of East Saginaw, committee on divisions O, P and Q; for the able and efficient manner in which their assigned work was performed. Also many thanks to Mr. Eli Bidelman, of Lansing, and S. B. Mann, of Adrian, for their kind assistance in arranging the fruit on exhibition, and caring for the same while there. These gentlemen gave their entire time from the commencement to the close of the fair, and their genial countenances, coupled with good advice, served to lighten the arduous duties of your superintendent.

N. CHILSON.

REPORT OF THE SUPERINTENDENT OF FLOWERS.

To the Executive Committee of Michigan State Pomological Society:

GENTLEMEN:—Another year has passed, another fair has been held, and the question naturally arises, have we learned anything new, or has the fair

been held only for the same purpose as a circus travels around the country, viz.: to take money from the people and gratify their curiosity? The exhibitions of the Michigan Horticultural Society should be held more as a matter of education than emulation; but the masses consider the fairs generally as shows, or exhibitions, where they pay their money and expect to see something extraordinary.

The exhibition of plants and flowers was not very large, but exceedingly fine. All the plants were well grown, healthy, and very choice, although they would not be appreciated by the public at large as well as some of the more common kinds. And there is where the matter of education comes to hand; the public at large can appreciate a poppy, marigold, snowball or lilac, much more than they can a bouvardia, coleus, agave, palm, or hot-house exotic; they cannot, for their life, see why a little plant that they could almost carry away in their pocket should cost fifty or sixty dollars; and it is such people that we have to gratify at all of our State, district, county and town fairs. Such being the case it is not at all surprising that so small space should be allotted to that which is only ornamental and can only be appreciated by the lovers of the beautiful and exquisite.

The building was the same as last year, but in the arrangement more space was allotted to plants and flowers. But the shape of the building was not adapted to the proper display of either pot-plants or cut flowers, and especially of large single specimens or designs.

PROFESSIONAL LIST—PLANTS IN POTS, ETC.

The display was very large and fine in this division; there being on display many palms, ferns, cacti, dracenas, caladiums, and other hot-house plants, which are as large and finely grown specimens as were ever exhibited at the Society's fairs, except perhaps the collection exhibited at Jackson, by Mr. E. Cooley, between whom and Mr. S. Taplin of Detroit, it would have been very difficult for even experts to have decided as to the better of the two. Mr. John Breitmeyer came second but carried off some first premiums. His collection certainly was creditable and well grown. Although it did not contain near as many rare and costly plants as Mr. Taplin's, still it was much better for commercial purposes.

DIVISION II,—PLANTS, AMATEUR LIST,

was not as well represented, but many of the single specimens were good and creditable to the exhibitors. I presume if more space had been allotted, more plants would have been exhibited; and what were in the hall could have been shown to better advantage had there been more room.

In Division V the exhibit was large, and some of the exhibitors had finely grown flowers, but the general exhibit was not as good as it should have been. The object of the society should be to keep the standard high and educate the people to cultivate very large and perfect flowers, if they do not have so many; whereas, profusion now seems to be the desired end, instead of quality.

DIVISION W,—BOUQUETS AND DESIGNS,

was well represented, especially in dried flowers, grasses, etc., but in fresh flowers the display was rather meager, and those not of as high order as we should have expected from a city of the commercial standing of Detroit. In this division there was considerable competition between natural flowers and artificials, which should be avoided in the future; neither should dried flowers

and grasses be allowed to come in competition with natural or fresh flowers. Among the exhibitors in the two last divisions, the largest part were outside of the city, whereas we expected to see more competition from the city.

In Division T there were awarded 22 first premiums and 9 second premiums, representing a money value of \$72.00. In division U, three first premiums and one second, were awarded which realized to the competitors \$12.50. But Division V being much better represented was awarded 15 first premiums and 10 second premiums, which distributed \$43.00 among the many exhibitors. In Division W 11 first premiums and 8 second premiums were awarded among the fortunate exhibitors, together with several discretionary premiums where the committee thought the articles were worthy, representing \$19.75, making a total of 51 first premiums and 28 second premiums, realizing to the exhibitors \$147.25 for the department of flowers.

There is one matter connected with this department which I cannot pass by without mention, namely: a decision of the Superintendent of the Agricultural Society, which I think was unwarranted and calculated to do much harm. I refer to allowing parties to sell goods in the hall in violation of the rules of both the Agricultural Society and also our own. A protest was sent to the executive committee against such action, but as yet I have seen no action in the matter, but hope no such conflict may occur again, for which I could see no reason or excuse.

I cannot close this report without returning my sincere thanks to the committees in my division, who labored arduously for the best interests of the society, and to do justice to the exhibitors. In their reports will be found several recommendations which I would heartily endorse; and with many thanks to the officers of the society and the members of the executive committee, and all others who aided and assisted to render my department of the fair of 1879 a success, I remain,

Yours, etc.

E. F. GUILD, *Sup't of Flowers.*

President Lyon as chairman of the *ad interim* committee submitted the following report on

NEW FRUITS OF 1879.

To the Michigan State Pomological Society:

In providing for the appointment of a standing committee on new fruits, of which I was constituted chairman, by some oversight, the filling up of the committee has been omitted; and since the secretary has, in the programme for this meeting, provided for a report from such committee, I herewith submit a report of such new fruits as have been brought to my notice during the past year; and in so doing, take occasion to suggest that the committee be filled up, and made to consist of at least one member from each of the districts into which the catalogue divides the State.

In the autumn of 1878 my attention was called to the Marvin strawberry by the originator, H. Marvin, of Ovid, Clinton county, who subsequently sent me, for trial, potted plants of the same, which fruited in June last. My notes taken at the ripening of the fruit, are as follows:

Plant vigorous, very stocky, of rather low growth, bearing a fine crop for young plants. Foliage nearly round, thick in substance, flat or cupped; serratures broad and shallow.

Flowers, staminate or perfect.

Fruit large to very large, longish conical; large specimens often cocks-combed; color, bright crimson; commenced to color about June 16th; first fully ripe specimens on the 20th.

Stems of medium height; strong.

Flesh, bright crimson; whitish at the center, firm, juicy.

Flavor high, rich, fine, with a very pleasant aroma.

Seeds prominent, greenish brown.

We regard this as a highly promising, very large, late berry, and especially so for market purposes.

In June, 1878, specimens and fruit upon the plant of a new seedling from Oceana county were shown at the June meeting of this society at Jackson. At the June meeting of 1879, held at Muskegon, the matured fruit was shown by Mr. E. J. Shirts, of Shelby, the introducer and alleged originator, and was from him named "Shirts," by the society.

We received plants of this from Mr. Shirts, which have fruited, and from these and from the fruit shown at Muskegon, the following notes were taken:

Plant vigorous, spreading, foliage thick, healthy; serratures coarse, irregular.

Flowers staminate.

Fruit large to very large, very long conical, irregular; color bright crimson, becoming very dark when fully ripe; stems (on planting of last spring), short.

Flesh red, paler at the center, rather firm, juicy, mild acid, rich, very good.

Aroma slight.

Seeds depressed or sunken, brown; a fine house fruit, and may prove valuable for market.

We, in August last, received plants of Windsor Chief from the originator; but as it is too soon for them to have fruited, and we took no notes of the fruit shown at Muskegon last June, the description must be omitted.

We only remark that it is said to be a cross of Chas. Downing upon the Champion; and that, like the maternal parent, it is pistillate; and that some of those who have tested it, consider it identical with the Champion in both plant and fruit.

Of the newer strawberries not in the catalogue, and not yet fully tested, we have fruited and made notes of the following, which we reserve for a fuller trial next year, viz.: Photo, Cinderella, Hervey Davis, Iowa Prolific, Starr, President Lincoln, Glendale, General Sherman, Peake's Emperor, Afrique, Wilding Seedling, Late Prolific, Arnold's, Burr Oak, Caroline, Centennial Favorite, Continental, Fowler's Seedling, Frontenac, Seedling Eliza, Miner's Great Prolific, Walden, Crystal City, Essex Beauty, Pioneer, Early Adella, Sharpless, and perhaps a few others.

GRAPES.

In the autumn of 1878, we received from G. W. Fulkerson, of Ovid, Clinton county, eight varieties of seedling grapes, all grown from the seeds of a single bunch of Wilder (Rogers' Hybrid No. 4), his statement being that some seventy plants were grown from the seeds of the bunch in question, of which twenty had already fruited, and that those sent were a selection from them. We were greatly surprised at the result as shown, not so much on account of the quality of the fruit, some of which we thought fully as good, possibly even better than the parent, but more especially from the circumstance that so many varieties of such high average quality, should spring from a single bunch of any variety, the usual experience being that scarcely one seedling in one thousand is found at all worthy of consideration.

THE PRENTISS.

We about the same time received from T. S. Hubbard, of Fredonia, N. Y., specimens of the Prentiss grape, a seedling of the Concord, originating in the State of New York, the description of which is as follows:

Plant vigorous, with large, strong, pubescent foliage; similar in this respect to Concord.

Bunch large; rarely, if at all, shouldered; very compact.

Berry large, round, except where crowded in the bunch.

Skin thick, ensuring fine keeping quality.

Color greenish or yellowish white. Season about with Concord.

Pulp tender, breaking; without austerity or acidity at the centre.

Juice abundant; aroma plentiful; but with no trace of offensive foxiness. Quality excellent. Indeed we regard it as a very valuable addition to our long keepers, and likely to prove valuable for market. In fact it seems quite probable that the contest between this, Niagara, Dutchess, Lady Washington and perhaps Pocklington, for the meed of popular preference, may turn upon *other questions* than that of quality. The variety is in course of propagation by Mr. Hubbard and is not yet offered for sale. He is expected to place the variety on exhibition at this meeting. A photograph of a branch 20 inches long, and carrying 19 clusters, weighing seven pounds, is submitted herewith.

PEACHES.

On the 27th of August last I received from J. D. Husted, of Lowell, Michigan, by mail, specimens of a seedling peach, by him numbered 15. Supposed to be a seedling of Hill's Chili, crossed with Hale's Early. Seed planted in 1875 bearing this year a full bushel—ripe with the last picking of Hale's Early, creamy white, of medium size, and mild vinous flavor—very promising.

No. 16, from the same source, and the same supposed cross, is medium sized, roundish, creamy white, red cheeked, and said to come in between Hale's Early and Large Early York. Three days later than No. 15.

No. 17, received Sept. 3d, 1879, from the same source, and the same supposed cross, is large, dark red, marbled on creamy white; flesh creamy white, firm, melting, juicy; mild, rich, sweet. Four days later than No. 15.

No. 20, received Sept. 3d, 1879, from the same source; size, above medium, clear, bright yellow and bright red; striped and shaded with very dark red, slightly pubescent; flesh, bright yellow, almost melting; very juicy, mild, vinous, rich.

No. 22, received from the same; size, medium to large, bright yellow and dull red; strong pubescence; flesh, pale yellow, delicate, melting, juicy; very mild vinous. Adapted to dessert and possibly to market.

No. 26, received from the same; size, large, dark red on clear yellow; flesh, bright yellow, delicate, fine grained, melting, juicy; rich, mild vinous, with some of the peculiar flavor by the French called "noyau;" dessert and perhaps market.

No. 46, received from the same; quite large, dull red, faintly marbled or striped on yellow; flesh, orange, yellow, dark red at the stone; rather firm, slightly fibrous, juicy; flavor, a mild mixture of sweets and acids; use, cooking and probably market.

We also received, from Mr. Husted, while at Rochester, forty-four specimens of as many later seedlings of Hill's Chili—one of each; but the circumstance

seemed to preclude a proper and careful examination there and at that time. We suggest that specimens of a few of the best of these, as well as of those above described, be sent us next season, or, still better, that occasion be taken to examine them upon the trees and careful descriptions made of such as shall be found worthy. We would especially suggest that they be not propagated and trees sent out until they shall have received names, thus avoiding the modern difficulty of having fruits or trees sent out under both numbers and names, to the annoyance and discomfiture of all concerned.

All of which is respectfully submitted.

T. T. LYON,

Chairman Com. on New Fruits.

The society next listened to the report of Mr. Lyon, as chairman of the delegation to the

ROCHESTER MEETING OF THE AMERICAN POMOLOGICAL SOCIETY.

To the Michigan State Pomological Society:

Having through your partiality been selected as your accredited representative to the meeting of the American Pomological Society, which occurred at Rochester, New York, on the 17th, 18th and 19th of September last, with permission to appoint a corps of associate delegates, I herewith submit my report of the doings of such delegation, with some account of the doings of that society. As the meeting at Rochester and the annual fair of the Michigan State Agricultural Society at Detroit (of the fruit and flower exhibits of which this society had assumed the care and management), were to occur on the same days, my duties at Detroit rendered it necessary that I take that city in my way and devote as much time to the opening arrangements for the State Fair as practicable. In pursuance of the authorization for the appointment of delegates the following persons were selected, they having previously indicated their willingness to act in that capacity, viz.: Prof. W. J. Beal of Lansing, W. K. Gibson of Jackson, Mrs. J. G. Ramsdell of Traverse City, J. P. Thompson of Detroit, and Israel Pennington of Macon. Of these, when the time arrived, Prof. Beal, J. P. Thompson, Israel Pennington and myself were able to attend the meeting, and the deficiency was made up in part by placing Edward Bradfield of Ada, and J. B. Dumont of Allegan upon the delegation. Since the session at Rochester was to open at 10 A. M. of Wednesday, 17th, I left Detroit, on the noon train on Tuesday, reaching Rochester at midnight, finding our delegates either already there or to arrive the next morning. The Canada Southern Railroad had advertised to carry delegates to Buffalo and return at two-thirds rates, but the arrangements had been so made that only a portion of the delegation were able to avail themselves of them. Through the kindness of P. Barry, Esq., we were very comfortably provided for in advance at the Osborne House, which had been constituted pomological headquarters—a precaution rendered necessary in consequence of the crowded condition of the city during the Western New York Fair then in progress. On the arrival of the proper hour the society was called to order by that time-honored pomologist, Dr. Jno. A. Warder of Ohio, one of the vice-presidents, the president, Col. Wilder, being unable to be present, owing, doubtless, to the effects of his last winter's misfortune, together with his great age—eighty-two years.

At the evening session the election of officers for the next biennial term was held, resulting in the re-election of all the old incumbents, with the single exception of treasurer. Thomas P. James having declined a re-election, E. W. Buswell, of Boston, was elected to that position. Prof. W. J. Beal, of our State, was also placed upon the Executive Committee.

After the election the address of President Wilder was (in his absence) read by Dr. Warder. Following the address of Col. Wilder the new treasurer read the report of his predecessor who had held the position for twenty years; whereupon a vote of thanks was tendered him for his long and efficient services in this capacity.

Mr. Thomas Meehan, who had been announced as one of the persons to address the society, was called upon and responded with an oral address which opened with a reference to the fable of the man who, in pondering over the processes of nature, complained that a feeble vine was compelled to sustain a plethoric pumpkin, while the mighty oak is only assigned the work of producing an acorn; but when he came to feel the impact of a tiny acorn, dropping upon his head from the branches of the oak, he was impelled to consider the effect upon himself had a pumpkin descended in its stead. With an inference from this as to the ability of man to wisely interpret many of the processes of nature he proceeded to consider some of the occult processes by means of which she conducts her operations in the reproduction of plants; dwelling especially upon the profusion with which the pollen of the chestnut is produced, and calling attention to the apparent fact that this pollen all falls before the female flowers open. He farther remarked that the real plant of the mushroom grows below ground—that above ground being the blossom; and that the plant may be propagated indefinitely by cuttings. Remarks were farther made respecting possible ulterior purposes to be subserved by the profusion of pollen. The idea was advanced that the great object of the Creator in the constitution of sexuality in plants is the attainment of variation. He also combatted the idea that the scarcity of insects to fertilize the bloom is the cause of poor crops of fruit. He thought that the feeding or starving of the plant, through the soil, had more to do in occasioning good or poor crops of fruit. Prof. Beal, of Michigan, thought the reason why apple trees fail of good crops when they blossom fully is to be sought in defective pollen or stigmas.

At the close of Mr. Meehan's address the society adjourned till the next morning.

The meeting on Thursday morning was called to order by Dr. Warder, who introduced Mr. P. Barry, of Rochester, first vice president, who then took the chair and presided over the session.

The report of J. J. Thomas, of the committee on synonyms and rejected fruits, received, was accepted and ordered published.

Prof. Beal, of Michigan, was called for and read a paper on "The Peculiarities of Flowers in Apples," which he illustrated by reference to diagrams of the different organs of the flower, enlarged. The idea brought out by this paper seems to be that these organs, or at least some of them, vary characteristically in different varieties; but that they are distinct and invariable in the same variety to such extent that they supply a trustworthy medium for the identification of varieties.

To our apprehension there is probably very much of truth in this conclusion of the professor, although, unfortunately, it can be utilized but for a few days

during the season of bloom, and not at all, till the tree shall have reached the age of bearing, when the fruit itself offers a far more natural and demonstrative means of identification: and one, too, requiring no Botanical or microscopic examination. Could the professor, or any other person, devise a reliable system for identification by means of foliage, wood, or habit of growth, or all these combined; he will have supplied a means of detecting error and fraud in the sale, purchase and selection of trees, for and at the time of planting; and, in so doing, enable planters to save half a lifetime, requisite, under the existing state of knowledge, for the determination of the value of our investments, or the realization of our purposes in this direction.

Our duties, as member of the Standing Committee on New Native Fruits, detained us at the fair ground, a mile or more away during the entire forenoon session, so that we missed the essay of Prof. Beal and the discussion of new fruits which followed it.

In the discussion of new native grapes, Moore's Early was commended, as two weeks earlier than Concord, and successful where many others fail.

Worden was also characterized as desirable for a similar reason.

J. J. Thomas remarked that, by mistake, or purposely, a large number of Concord had been sent out as Wordens.

Niagara—a new white grape—was spoken of by Mr. Moody, of New York, as having originated on the grounds of Mr. Hoag, at Lockport, N. Y.; and from the examination of it, in connection with the committee on new native fruits, we were highly impressed with its value. It is not yet offered for sale.

Brighton was well spoken of by all, except Mr. Saul, of Washington, D. C., who found it useless there. We subsequently saw it upon the trellis at N. E. Hooker's place, where it showed abundant evidence of health, vigor, productiveness and high quality.

Prentiss—A new white grape, now under propagation by Mr. Hubbard, of Fredonia, N. Y., was commended during the discussion by those who had seen it. It also seems to have made a favorable impression upon the native fruit committee, who had it under examination.

Pocklington is yet another new white grape, with very large bunch and berry, good quality and strong growth.

A very pleasant episode in this grape discussion was introduced by Dr. Hamilton, of Nova Scotia, who remarked that it might seem out of place for him to say anything about grape growing, coming, as he did, from a country supposed to be surrounded by icebergs. He grew Salem, Concord, Isabella, Sweetwater, Black Cluster, and Diana, in the open air, by girdling and close pruning. He found Champion and Worden early and promising, and was able even to grow and ripen Black Hamburg, in the open air by girdling and pruning.

Early Dawn grape was spoken of, not quite favorably, by Mr. Force, of Newburgh, New York.

Mr. Campbell, of Delaware, Ohio, in speaking of the Lady grape, originating with him, said it was of the general habit of the Concord; two weeks earlier, and the best of his early sorts. This was confirmed by speakers from Massachusetts, Connecticut, New York, and the District of Columbia.

The discussion was arrested at this point while the presiding officer announced a telegraphic greeting from the Michigan State Pomological Society, then in session at the State fair, Detroit.

The greeting was received and heartily responded to, by P. Barry, acting president.

Champion grape (Talman), was spoken of as being sold in Canada under the new name, Beaconsfield.

Isadore Bush, of Missouri, remarked that they must look to natives of the lower Mississippi and Missouri for varieties to succeed with them, and that grape culture must depend on wine making for a large market. He named Elvira as the best to resist disease, and also Noah as a newer sort possessing similar qualities.

The committee on fruits exhibited, reported that they found on exhibition 859 plates of apples, 517 plates of pears, 16 plates of peaches, 409 plates of grapes and 37 plates of miscellaneous fruits—an aggregate of 1,838 plates.

Instead of an evening session, the society accepted the invitation of Mr. D. W. Powers to visit his picture gallery and other rooms, which had been opened for the occasion, and to a horticultural collation prepared for the members of the society. An hour or two was very pleasantly devoted to an examination of the various gems of art collected here, after which the members collected in a large hall adjacent, which had been beautifully fitted up with tables, etc., for the occasion, and where we were treated to a fine collation, followed by a series of toasts, with responses by such gentlemen as Barry, Warder, Strong, Thomas, and others, at the conclusion of which the gathering dispersed, to reassemble on the morrow for their final session.

On assembling on the last (Friday) morning, the attendance was considerably diminished by the departure of members for their homes.

A proposition was submitted by S. C. Carsons, of Long Island, N. Y., looking to the formation of a national horticultural society; and proposing a committee to take the matter under consideration and report at a subsequent meeting. After considerable discussion it was decided that the society had enough to do to care for pomology, and the proposition was therefore tabled.

The committee on fruits exhibited, by its chairman, P. J. Berekmans, of Georgia, reported an award of a large number of Wilder medals for meritorious articles exhibited, among which was one to the Michigan State Pomological Society, for its display; but in consideration of the fact that nearly the entire exhibit from Michigan was contributed from the Grand River Valley Horticultural Society, including the beautiful display of grapes from Mr. Edward Bradfield, your delegation (or, at least, those of them who were within reach), were agreed that the medal should go to that society, and the committee were requested to amend their report accordingly.

The society invited Mr. Husmann, of Missouri, to speak of some of the seedling grapes of his state. He named the Elvira as the best. He also spoke of the Amber, Pearl, Beauty, Black Taylor and Uland as promising varieties, the basis of their value being their adaptation to the production of wine.

The society next turned its attention to the discussion of the early peaches.

Saul, of Washington, said the Wilder ripened with him from the 6th to the 15th of July.

Lyon, of Michigan, found it to ripen this year with Amsden and Alexander, about the 25th of July.

Hape, of Georgia, fruited the Downing, Saunders and Wilder, this year; and found the Wilder four days later than Alexander. The Downing was the finest of the three.

Pardy, of N. Y., picked Alexanders at night and found them unfit to ship next morning. He doubted the profitableness of early peaches at the north. His experience in this respect was considered exceptional, as several others had experienced no such difficulty, under similar circumstances.

Saul commended Bowers' Early for Maryland; also Levis' Late for Washington, D. C.

Husmann commended a recently discovered late seedling, ripening October 13th, and named October Beauty.

Green, of Rochester, N. Y., commended the Wager peach,—a new variety. W. C. Barry named Early Silver, and Early Rivers, as acquisitions.

Hape, of Georgia, named Hape's Early, as promising.

Saul named Bilyeris Late, and Fleita's St. John, as excellent at Washington.

After the close of the discussion on peaches, Professor Lazenby, Superintendent of the horticultural gardens of Cornell University, gave an address on the Relation of Science to the Profession of Horticulture, replete with hints respecting the important bearings or relations of the two; but of which we can hardly claim your time for even an abstract.

A brief space of time was then devoted to the discussion of Strawberries.

Mr. Barry named the Sharpless, of which he had been the introducer, and commended it highly. This was concurred in by Rev. E. P. Roe, of Newburgh, N. Y., who spoke of the Seth Boyden, as successful as far south as Florida. He also mentioned Neunan's Prolific as marvelously productive in Georgia. He, however, regarded Miner's Great Prolific as the most promising among 140 varieties he had tested; while he regarded the President Lincoln as very desirable, and he named the Crystal City as the earliest.

W. C. Barry spoke of Cinderella as bearing large crops, and as being highly perfumed.

Hape, of Georgia, commended Monarch of the West for his locality; and named the Eclipse as standing their southern sun well.

Purdy, of N. Y., named Pioneer, as the most delicious variety he grew; and spoke of the Prouty as too prolific. He spoke of the Wilson as unsurpassed; and characterized the Great American as a failure.

This closed the discussions, and was followed by the report of the committee on resolutions; after which a few explanatory statements were made by Mr. P. Barry, respecting the action of the Western N. Y. Agricultural Society, in refusing the usual courtesy of passes, to the members of the Pomological Society in attendance.

The Agricultural Society provided a tent; and, as we understand, shelving and dishes also, for the exhibit of the Pomological Society, upon their grounds from one to two miles from the city hall, in which the sessions of the Pomological society were held, involving two street railway fares each way. The Agricultural Society neither offered nor paid any premiums upon any portion of this exhibit. While on the other hand, exhibitors were compelled to pay an admittance of thirty-five cents when it became necessary to go in to put up or care for their fruits; and even the examining committees of the Pomological Society, in the discharge of their duties as such, were compelled to buy their admissions to the grounds. We presume no person cared specially for the mere pittance required and paid in this manner; but some, if not all concerned, felt its exaction, under these circumstances, to be an utterly unjustifiable imposition.

We feel obliged to say, moreover, that we are given to understand that this exaction grows out of no neglect on the part of the pomologists of Western New York,—that they had made arrangements for the exhibition, on the grounds of the Agricultural Society, under the assurance that the desired passes should be forthcoming; and that such pledge was repudiated at the last moment.

The unfortunate character of this arrangement, with the remoteness of the exhibit from the place of meeting, seems to have created a tendency in the Society, or at least with some of its members, to abandon the effort to collect large displays of fruits at the gatherings of the Society, and instead, to confine them mainly to new sorts,—these to be exhibited at or near the place of meeting, with the purpose to detract as little as possible from the interest in, and attendance upon the discussions. To do so, however, would be to sacrifice the (to the pomologist, whether learner or teacher) most important and valuable possible opportunity to compare and study the influences of diverse or remote soils and climates upon varieties of fruits; and also the opportunity to compare the popular local sorts of different and remote localities, with a view to more definitely determine their actual or relative values. These objects seem to us so highly important, not to say essential, that we apprehend the Society will not hastily take action in the direction suggested.

Very soon after my appointment as chairman of the delegation, measures were taken to secure a large and creditable collection of fruits to represent our State at the Rochester meeting, and assurances were received from Grand Traverse, Grand Rapids, Saugatuck, South Haven, Kalamazoo county, St. Joseph, Battle Creek and Adrian. Of these a fine, carefully selected and correctly named collection was sent from the Grand River Valley Horticultural Society, in personal charge of Mr. Edward Bradfield, who also made up a large exhibit of grapes from his own vineyards, and instead of the expected collection from Saugatuck, there came a small but very fine collection of peaches from Allegan, by J. B. Dumont, of that place, made up, as we understand, mainly if not entirely, from his own orchards, he going personally in charge of them. These were all the collections proper that appeared from Michigan.

Besides these, however, Mr. Fulkerson, of Ovid, Clinton county, sent a collection of eighteen or twenty varieties of seedling grapes, all originating from seeds of a single bunch of the Wilder (Rogers No. 4), which were not placed on exhibition, but were instead, brought before the native fruit committee at their rooms for examination and a report as to their merits. At almost any other time, we fancy, they would have attracted much attention, but coming as they did, in competition with the Rickett's seedlings, the Lady Washington, the Dutchess, Niagara, Prentiss and Pocklington, and also with a number of fine seedlings from Missouri, they were quite overshadowed. We omit all extended notice of these as they are expected to appear in the report of your standing committee on new fruits.

A very large and fine collection of alleged Hybrid peaches was also sent by J. D. Husted, of Lowell, Kent county, a few of which had been previously sent us for examination. Those sent to Rochester were mainly one each from seedlings of Hill's Chili, some of which were apparently improvements, in appearance at least, upon the original; but the committee had their ideal so much above the actual Hill's Chili that they failed to discover in these anything calling for more than a cursory examination. There was, in fact, throughout the collection a very wonderful similarity to each other. These also may be expected to receive attention from our standing fruit committee.

Aside from the above-named collections, all of the pledges seem to have come to naught; very probably for the reason that the parties found their energies fully taxed with the effort to secure the requisite collections for the State fair, to occur at the same time.

Before the adjournment of the Rochester meeting, the location of the meeting two years hence being under consideration, the delegation from the State

of Missouri, after allusion to the very excellent meeting held at St. Louis some years since, invited the society to hold its next meeting in that city, assuring them that they would be cordially received and their sessions fully attended. Your delegation also, under your authorization, tendered them a hearty invitation to Michigan, remarking that while Detroit is our metropolitan city, the great pomological interests of the State are largely at the west, asking for that reason that the *place* of such meeting be left to subsequent arrangement and pledging that wherever in the State it shall be held, it shall be made pleasant and interesting to the society. It was also added that we had been given to understand that it is the wish of President Wilder that the next session be held in Boston, and as we inferred that there would be a strong inclination to accede to his wishes in the matter, we expressly disclaimed all disposition to urge our invitation in opposition thereto.

No other invitations were extended, and we only add that if for any cause the coming meeting shall not be located at Boston, we indulge a somewhat confident hope that it may be accorded to our State. All which is respectfully submitted.

T. T. LYON,

Chairman of Delegation.

SECRETARY'S ANNUAL STATEMENT FOR 1879.

Mr. President, Ladies and Gentlemen of the Society:

In submitting my brief annual statement, I can but indicate the work that our society has been doing the past year. The months have brought more for me to do than those of previous years, still I can not describe to you in a short half hour anything of its character. Suffice it to say, each day has brought something to do, and, like a woman's work, mine has never been done.

I shall deal more particularly with those things which concern the society at large, and in which you all must have a deep interest as well-wishers of our cause.

First let me call your attention to the finishing up of the odds and ends of last year, and speak of the

REPORT OF 1878.

The manuscript for our volume of 1878 was all in the hands of the printer by the close of the year, as required by law; and great credit is due Messrs. W. S. George & Co., state printers, for the promptness with which the volumes were made ready for distribution. One hundred copies were ready to be given out to new members at the winter meeting in February, and the general distribution occurred about the first of May.

Knowing the desire of our executive committee to place the reports in the hands of men who would appreciate their worth, I was particularly careful in the selection of those to whom boxes were to be forwarded. The packages were put up in 10s and 30s and sent to the following addresses:

South Haven Pomological Society; I. E. Ilgenfritz, Monroe; A. J. Dean, Adrian; Chas. W. Sheldon, Burr Oak; E. H. Reynolds, Monroe; F. M. Manning, Adrian; H. O. Hanford, Plymouth; N. Chilson, Battle Creek; Wm. Mebert, Traverse City; D. A. Blodgett, Hersey; Samuel A. Cady, Wayne; H. A. Wycoffe, Clyde; Thomas Wilde, Berlin; John J. Hubbell, Benzonia; Wm. Caldwell, Commerce; Henry Fralick, Grand Rapids; J. W. Childs, Ypsilanti; W. H. Raymond, Grass Lake; Wm. Probert, Pleasanton; C. Chil-

son, Bay City; L. L. Lance, Glenn; Nathan Neff, Wayne; J. G. Ramsdell, Traverse City; C. N. Merriman, Pentwater; H. Dale Adams, Galesburg; E. Buell, Kalamazoo; J. E. Barringer, Armada; Frank S. Burton, Midland City; M. Shoemaker, Jackson; Allegan County Pomological Society; Michigan Lake Shore Fruit Growers' Association; A. C. Glidden, Paw Paw; Wm. Ball, Hamburg; A. O. Hyde, Marshall; W. H. Cobb, Kalamazoo; J. M. Sterling, Monroe; E. W. Rising, Davison Station; D. T. Dewey, Owosso; A. F. Wood, Mason; C. E. Davison, Wayland; R. F. Johnstone, Detroit; Franklin Wells, Constantine; G. W. Phillips, Romeo; H. G. Wells, Kalamazoo; J. F. Romer, Bay City; Geo. E. Steele, Elk Rapids; A. P. Gray, Traverse City; S. W. Fowler, Manistee; F. J. Dowland, Ludington; E. J. Shirts, Shelby; J. Q. A. Burrington, Tuscola; Wm. L. Webber, East Saginaw; W. O. Fritz, Pompei; James Satterlee, Greenville; S. B. Peck, Muskegon; N. A. Beecher, Flushing; J. B. Barnes, Owosso; S. S. Walker, St. Johns; W. D. Arnold, Ionia; Grand River Valley Horticultural Society; J. C. Holmes, Detroit; D. B. Briggs, Romeo; C. K. Carpenter, Orion; Lewis Scott, Brighton; W. Asa Rowe, Mason; Mrs. R. M. Cook, Charlotte; A. C. Town, Milo; Saugatuck and Ganges Pomological Society; E. W. Cottrell, Greenfield; Ann Arbor Pomological Society; H. F. Thomas, Jackson; J. N. Stearns, Kalamazoo; Lawton Pomological Society; Adrian Horticultural Society; C. R. Coryell, Jonesville; Coldwater Horticultural Society; B. G. Buell, Little Prairie Ronde; A. O. Winchester, St. Joseph; S. B. Mann, Adrian; George Parmelee, Old Mission; E. F. Guild, East Saginaw; N. Chilson, Battle Creek; S. M. Pearsall, Grand Rapids; T. T. Lyon, South Haven; Central Michigan Agricultural Society; State Agricultural College.

Aside from the above 10 volumes were sent to each of the following states and institutions in exchange for their volumes: Maine Board of Agriculture and Maine Pomological Society, Vermont Board of Agriculture, Massachusetts Board of Agriculture and Horticultural Society, Connecticut Board of Agriculture, Western New York Horticultural Society, Cornell University, New Jersey Horticultural Society, Pennsylvania Board of Agriculture and Horticultural Society, Georgia Horticultural Society, Louisiana Agricultural College, Ohio Board of Agriculture and Horticultural Society, Indiana Board of Agriculture and Horticultural Society, Illinois Board of Agriculture and Horticultural Society, Iowa Agricultural College, Wisconsin Agricultural Society and Horticultural Society, Kansas Board of Agriculture and Horticultural Society, Ontario Fruit Growers' Association, Department of Agriculture, Toronto; Montgomery County (Ohio) Horticultural Society, Minnesota Horticultural Society, Missouri State University. In addition to this, large numbers of volumes have been sent out by express and mail to parties requesting copies.

Previous to the general distribution of boxes about the state, I thought it best to take the precaution to secure, if possible, the names of all the parties into whose hands the volumes were placed, and to this end addressed the following letter to those who were to receive boxes:

MICHIGAN STATE POMOLOGICAL SOCIETY, }
SECRETARY'S OFFICE, GRAND RAPIDS, April 28, 1879. }

MY DEAR SIR:—Owing to unavoidable delay our reports will not be shipped until April 15. I desire that they be placed in appreciative hands. It costs much labor and expense to make the volumes, and the society is beginning to feel, although the demand for them cannot be supplied, that the work we are doing is not understood or it would be better supported. Last year we sent out 3,300 copies and in return received less than 150 members. President Webber, of the State Agricultural Society, said of our society: "It is accomplishing a valuable work for Michigan

people, and has a right to expect ample support in return." The question with us is, will we receive it? April 15th I will ship you a box of our volumes for 1878 if you will place them in good hands. In connection therewith I ask two favors for our society: 1st, that you keep a record of the names and addresses of those to whom you give volumes, for our use; 2d, secure for us a few members, if possible. A full list of members for last year is in the report. Please send us full names and addresses with the fee (one dollar), and I will return certificates. Please reply on enclosed postal card. Yours truly, CHAS. W. GARFIELD.

If it were not my duty to report upon this matter to you, I should not refer at all to the results of this effort. I have received but ten lists of persons to whom the reports have been given, and less than thirty-five annual members. Let me explain, however, that I hope there are a good many reports from the recipients of boxes already made out, which have not been sent in to me, and I trust that before January 1st, 1880, our list of annual members will be swelled to a more satisfactory figure. The volume of 1878 has received numbers of very favorable notices from pomologists of other States, and if the call for it from outside our own borders is any indication of its real value, it certainly has a mission to fill in the progress of pomology in the west. It remains to be seen whether the Michigan State Pomological Society can maintain the position given its Transactions. The solution of the problem depends entirely upon the support which Michigan horticulturists will give their leading organization; and this leads me to say a few words concerning

OUR MEMBERSHIP.

We have at present one hundred and forty-nine life-members distributed as follows: Monroe, 18; Kent, 18; Saginaw, 17; Grand Traverse, 15; Ionia, 13; Kalamazoo, 9; Jackson, 9; Van Buren, 9; Wayne, 5; Berrien, 4; Ottawa, 4; Lenawee, 4; Ingham, 3; Muskegon, 2; Washtenaw, 2; Montcalm, 2; Hillsdale, 2; Calhoun, 2; Bay, 1; Manistee, 1; Clinton, 1; Cass, 1; Tuscola, 1; Allegan, 1; Mason, 1; Oceana, 1; St. Joseph, 1; New York, 1; Indiana, 1.

This fund, \$1490, at seven per cent, gives an annual increase of \$104.30. The annual membership fund amounts to \$200 or less, and taken at its maximum and added to the receipts from the permanent investment gives only a little over three hundred dollars for the expense of carrying on the society in its quarterly meetings, editing and distributing its annual reports, and a great amount of other work which is only known to a few of those who are shouldering the burden. It becomes necessary, then, for the society to go into the show business, to eke out a living and maintain its position among organizations of its character. We receive no State aid save the printing and binding of our annual volume, and the furnishing of a room in which to stow away our surplus volumes. We certainly ought to receive the voluntary support of a people who claim to live in the most progressive fruit State in the union, when it is so generally understood that the work of the society has been the power to elevate the State into its commanding position in pomology. I have been figuring at some method by which we could secure this aid; there is no doubt in my mind that there are a thousand people in Michigan who would be willing and glad to each give a dollar a year in support of this enterprise and would continue the annual membership indefinitely upon being notified annually of the expiration of their certificates. Allowing the population of the State to be a million and a half I have apportioned the 1,000 members to the various counties of the State nearly according to

population, varying only a little by increasing the quota of those localities especially devoted to the growing of fruit, and with the following results:

Counties.	Nos.	Counties.	Nos.
Alcona.....	1	Lake.....	1
Allegan.....	25	Lapeer.....	17
Alpena.....	3	Leelanaw.....	4
Antrim.....	3	Lenawee.....	35
Barry.....	17	Livingston.....	14
Bay.....	19	Mackinac.....	1
Benzie.....	4	Macomb.....	18
Berrien.....	30	Manistee.....	7
Branch.....	26	Marquette.....	12
Calhoun.....	28	Mason.....	5
Cass.....	18	Mecosta.....	6
Charlevoix.....	1	Menominee.....	2
Sheboygan.....	2	Midland.....	3
Chippewa.....	1	Monroe.....	24
Clare.....	1	Montcalm.....	14
Clinton.....	18	Muskegon.....	16
Delta.....	3	Newaygo.....	4
Eaton.....	17	Oakland.....	30
Emmet.....	1	Oceana.....	8
Genesee.....	28	Ontonagon.....	2
Grand Traverse.....	8	Osceola.....	4
Gratiot.....	10	Ottawa.....	24
Hillsdale.....	25	Presque Isle.....	1
Houghton.....	12	Saginaw.....	38
Huron.....	8	Sanilac.....	11
Ingham.....	25	Schoolcraft.....	1
Ionia.....	24	Shiawassee.....	18
Iosco.....	3	St. Clair.....	24
Isabella.....	4	St. Joseph.....	20
Jackson.....	29	Tuscola.....	12
Kalamazoo.....	23	Van Buren.....	25
Kalkaska.....	1	Washtenaw.....	28
Kent.....	48	Wayne.....	100
Keweenaw.....	3	Wexford.....	2

Now is it not possible to conjure up some plan by which these people can be reached at little expense? If once the expenses of running the society could be met without expending so much effort in the exposition business, our leading and working members would be free to take hold of the fairs and really do better work than now; and our quarterly meetings could be made small expositions in themselves. I leave the further discussion of this matter to the society, and as the topic is one that occurs on our programme I shall expect some definite and satisfactory action will be taken to place ourselves upon a more settled basis.

FINANCES.

The duty of the Secretary in the matter of society finances is to keep a classified record of the disbursements. The report made at this early day in December cannot reach farther than the opening of this month so that the classified statement which is here appended is for the year closing November 30, 1899:

CLASSIFIED DISBURSEMENTS.

President's office.....	\$13 66
Secretary's office.....	19 98
Treasurer's office.....	13 16
Executive committee.....	170 63
State Fair.....	335 26
Back reports and exchanges.....	23 70
Secretary's salary.....	600 00
Transactions of 1878.....	83 96
Transactions of 1879.....	15 00
Advertising.....	50
Fruit catalogue.....	184 79
Traveling expenses, Secretary.....	9 70
Printing.....	15 00
Room in Capitol.....	7 90
Delegate to Illinois and Indiana.....	35 00
Telegrams, express, etc., unclassified.....	20 44
Total disbursements for the year.....	\$1,548 68

The above statement may not include all the expenses for the year, for there may be bills outstanding which have not been presented; only the checks drawn in payment of bills are recorded in the Secretary's books. As far as I know, however, there is scarcely anything standing against the society save the expenses attendant upon this annual meeting.

THE MICHIGAN FRUIT CATALOGUE.

During the winter of 1878-9, President Lyon, with a very little assistance from associates in various parts of the State, undertook the work of completing a fruit catalogue for our State, after the style of the one issued by the American Pomological Society, with some modifications to suit our especial locality. It was a severe task, and undertaken by our President as a "labor of love." He did his work upon it, oftentimes, when he should have been resting, receiving for his labors scarcely any financial requitement at the hands of the society. Aside from this gift of labor, the society put into the catalogue as has been seen in the above financial exhibit, \$184.79.

The executive committee hoped to greatly benefit planters in the State by scattering this catalogue plentifully among them, and decided to send it out for the cost of mailing. In pursuance of this thought, I issued the following circular, which was placed in nearly every paper in this State, and all the prominent agricultural papers in the United States:

MICHIGAN FRUIT CATALOGUE.

The State Pomological Society has just issued a catalogue of Michigan fruits, which describes all the prominent tested varieties and grades their value for market, for cooking and dessert purposes. The volume will be very valuable for planters in all parts of the state, for it gives the adaptability of each sort to the various localities. The catalogue is issued for the benefit of fruit growers everywhere, and can be secured by enclosing a three-cent stamp to Secretary

CHAS. W. GARFIELD,
Grand Rapids, Michigan.

One nurseryman in the state, having expressed the desire to incorporate the catalogue with his annual trade list, it was thought best to give all the same liberty, and thus, perhaps, increase the influence of the catalogue, so that the following bulletin was issued to nurserymen:

ANNOUNCEMENT.

We are about to issue a catalogue of the varieties of Michigan fruits, which is intended to convey the following facts to horticulturists:

1. A description of each tested variety, with its name.
2. Comparative merit of each kind for cooking, dessert and market.
3. Adaptability of each to various sections of the state.
4. Peculiarities that determine the value of each sort.

The executive committee of the society voted that nurserymen in the state who desire to incorporate this catalogue with their trade lists can have the privilege. The catalogue will soon be in type, and probably arrangements can be made with the state printer to strike off extra copies at very small expense.

CHAS. W. GARFIELD, *Secretary*.

Grand Rapids, Dec. 28, 1878.

As a result of the first circular I had a good deal of mail for some months; letters came in great numbers, and occasionally even now I receive applications for catalogues. But two nurserymen took advantage of the offer in the second circular; but tree agents everywhere must have a catalogue with them, and these gentlemen have shown their appreciation of our work by using the catalogues in making their sales.

The expense of printing the catalogue has been borne by the society, and, together with the labor of its compilation, is a free gift to the pomology of Michigan. When clearly understood by those for whom it was originated, its appreciation must, it seems to me, not only elevate and strengthen our state pomologically, but bring assistance to the upbuilding of our society.

POMOLOGY IN THE CAPITOL.

For two successive years previous to 1879, I have called your attention to the reasons for this association taking a permanent place in the State capitol. I will not rehearse these again; we have a place in the capitol, a small room in the basement, and through the indefatigable work of a worthy member of our executive committee, Mr. Bidelman, and the courtesy of certain officers of the State, we have some cases for our books, a desk, and some chairs in it. We can have a better place by exhibiting through our works, that this is by no means large enough. Before the next legislature meets, we ought to have that room so filled with books, specimens, etc., that the smallest messenger boy could not turn around in it. We can then have more room,—there is no doubt of it. Shall we make this effort for something better, or shall we remain satisfied with the place that they have put us in? I say let us swell beyond these limits and compel recognition. I trust action will immediately be taken upon this matter.

RECORD OF REPORTS, LIBRARY, ETC.

Every year some reports disappear from our possession without being accounted for. This must be the case when so many have access to them, but now that we can place our property under lock and key, in the Capitol, I trust we shall be able approximately to account for every volume. I made a careful count of the volumes on hand at the opening of the year, which, with the record of disbursements, is placed in the table below:

	1871	1872	1873	1874	1875	1876	1877	1878
Volumes on hand at beginning of year.....	18	82	46	46	183	900	840	4000
Disbursements in 1879.....	4	18	19	17	35	54	59	3323
Balance on hand.....	14	64	27	29	148	846	781	677

I have found it very difficult to explain in numberless cases that the earlier reports of the society have been gathered in at no little expense, and are to be used only as exchanges. If money could have bought the volumes of 1871-2-3 and 4, at any reasonable figure, I should have had none to report to you, as on hand at the close of the year; but I have restricted their disbursement to exchanges and the supplying of public institutions.

Our library has been under the especial care, during the greater part of the year, of Mr. Eli Bidelman of Lansing, who kindly offered to do what he could for the society in this way, while a resident of Lansing, and through his influence quite a number of additions have been made. Inasmuch as the secretary, unless a resident of Lansing, cannot have immediate charge of the library, I suggest the desirability of appointing a librarian who lives in Lansing, and can, without much trouble, look after the care of our property in the State Capitol.

OUR QUARTERLY MEETINGS.

The winter meeting, held in Lansing, was well attended, and fraught with good results. The conference with members of the legislature acquainted them with our work and wishes, and without doubt had a favorable influence upon legislation in the interests of horticulture. The display of fruit was better arranged than ever before, and was the admiration of all who observed it.

The Lansing Republican, although well crowded in its columns, made a very full report of the proceedings of this meeting, which was copied largely by papers in and out of the state.

It was at this session that the society made its first record in full discussions upon "Ornamenting Country School Grounds" and "The Farmer's Vegetable Garden," discussions which have been quoted from during the entire year, and which I believe are wedges that will help to cleave deeper into these subjects at future sessions of the society. The June meeting convened in Muskegon, and, although the attendance from abroad was as large as usual, the local attendance was so light that very little value was attached to many of the discussions.

The most valuable results of these meetings comes from liberal discussions of the topics presented, and these must be participated in by people of the immediate locality in which the meeting is held, or a large part of the benefit is lost—this because the topics are usually chosen with reference to the locality.

The most animated discussion at this Muskegon meeting occurred in connection with the fruit catalogue, in naming the position of the Wilson strawberry for market. At last the convention with unanimity asked the committee on fruit catalogue to drop the Wilson from 10 to 9 as a market berry. It was at this session that the first action was taken toward securing a session of the American Pomological Society in Michigan. There was a general desire that every legitimate step be taken to secure the meeting of 1881 at some point in the state, and it is to be hoped that this desire may be seconded, in case we are successful, by earnest work to make the session the best one that association ever had, and thus we can take our rank as an earnest, hospitable, painstaking people in all matters connected with the advancement of pomology.

The annual meeting here in Allegan was in acceptance of an invitation sent by the Allegan County Pomological Society. A similar invitation came from Hillsdale county a little later, but the executive committee formally decided it was better to go to Hillsdale in February, for the winter meeting, and decided to recommend this action to their successors in office.

I believe the plan of quarterly meetings, held in acceptance of invitations from localities, and supported by the localities, aided by our officers, is a very proper one, and has been at the foundation of our success. I further believe it pays each locality sending the invitation to do everything within the power of the inhabitants to secure the attendance of horticulturists from other places; it is like an influx of new blood, and by entertaining these prominent men in their homes the people are taught many lessons that otherwise would be lost.

LOCAL HORTICULTURAL SOCIETIES.

The number of local societies is gradually increasing, and I count this a good omen in our progress. Two new societies at least have been organized, one at Fenuville, in Allegan county, and one at Benzonina, in Benzie county. There should be an intimate relationship kept up between the local and State societies. We are one in purpose, and can be of mutual aid to one another in developing the possibilities of each section. It is through these local organizations that we can best perfect our catalogue of fruits if they will only "lend a hand" in the work.

THE ANNUAL FAIR.

It is well known to you that our executive committee arranged again in 1879 to exhibit for the State Agricultural Society. I do not wish to encroach upon the reports of other officers of the society in referring to the annual exhibition, but I do want to say that we are making material progress in this business. Our committee work was ably performed this year, and upon the right basis; the methods of giving accurate information to the public are becoming more perfect every year. The clasps which were employed, when rightly used, will be a great improvement, and, if in the future, we can have such an arrangement of hall as to plan the positions of the various departments of the premium list, so that there shall be a clearly defined division line; and employ tables in the place of shelves, with plenty of sky light, we shall have reached a commendable position in the show business. Circulars were issued from time to time by me to the fruit-growers during late summer, and I am satisfied exhibitors paid more attention to the collection of specimens than ever before. I attribute our very large exhibit to the following facts: 1st, the arrangement of our premium list, which as it now stands, is the best catalogue of prizes for pomological products that I have ever seen, even although the amount of money awarded is not large; and 2d, to the free circulation of bulletins among fruit-growers by the Superintendent of fruits and the Secretary. I append a copy of the first circular that was sent out which was followed by a number of others:

CIRCULAR No. 1.

The State Pomological Society calls attention to the following facts about the fair of 1879:

First—Our hall is to be greatly enlarged.

Second—The arrangement of fruit and flowers will enable an observer to take in the entire exhibit at one glance.

Third—Our plates are pearl white and thus add to the appearance of the fruits.

Fourth—We have at much expense secured brass clasps to be attached to the plates, which will hold card labels well above the fruit.

Fifth—Our cards will have the names of all prominent fruits printed thereon in clear bold type.

Do not neglect us this season; apples are scarce but other fruits are plenty. Our premium list, which has been sent you, offers better inducements than last year.

Grand Rapids, Mich.

CHAS. W. GARFIELD, *Secretary*.

The one thing in which we lack now at our shows, is such an arrangement and display of large placards as will indicate clearly to every observer the exact position of each department of the premium list. This is impracticable unless it is absolutely certain that we know two things: that our hall will be large enough for the display, and what collections are to be exhibited at least the Saturday before the fair opens.

My suggestion then, is, that entries of collections be closed two days before the opening of the fair. I tried very hard this season by issuing the following letter to leading fruit growers, to ascertain if possible about what space would be required:

My Dear Sir—It will expedite matters and prevent a great rush at the opening of the fair if all those who are to make a number of entries in the department of *Fruit and Flowers* will make out a list of the entries before fair week. All that desire blank entry lists please drop me a card, giving full name and address, and I will forward them at once. If lists of entries are made out before September 1st, send to me at Grand Rapids; later, in care of Secretary R. F. Johnstone, Detroit.

Go through your orchards, gardens and green-houses and select your best for the fair. Our society has never failed to make a grand show. *Let us maintain our reputation.*

CHAS. W. GARFIELD.

Grand Rapids, Mich.

Secretary.

It proved a failure as you will observe when I say, that of a total of 1,502 entries, but 190 had reached me by Monday noon of fair week. This faulty plan of putting off the making of entries on the part of fruit-growers, reacts upon themselves. They crowd so much work into the Secretary's office at one time that it is impossible to do justice to the exhibitors; and the Superintendent of the hall cannot plan the arrangement of exhibits until the entries are made; and because he does not have a place for every man to go when he appears with his fruits in the hall, he is blamed, and without reason.

WORK OF THE EXECUTIVE COMMITTEE.

The executive committee have held four meetings during the year, as follows:

Detroit, January 14th.

Lansing, February 19th.

Kalamazoo, June 27th.

Detroit, September 15th, 16th, 17th, and 18th.

The first meeting in Detroit was in connection with the State Agricultural Society, and the result of the conference with a delegation from the executive committee of the State Agricultural Society is best expressed in the report of their committee, which was unanimously accepted and adopted by their executive committee, Tuesday evening, January 14th, 1879.

The committee appointed to confer with a like committee from the State Pomological Society, upon matters of common interest to both organizations especially in connection with the annual Fair, respectfully report as the results of joint interview:

First, That the Pomological Society be invited to exhibit with us at the annual fair under the same regulations as to entries, admissions, payment of premiums, etc., as last year.

Second, That there be appropriated for the use of the Pomological department of the fair the same amounts as last year, to wit: \$1,000 for premiums and fourteen hundred dollars for general expenses under like regulations and restrictions as in previous years.

Third, That in case it is found necessary or advisable to erect a new hall for any purpose, if consistent with the best interests of the fair of 1879, this hall be built for the pomological exhibit and the present hall be employed for other purposes;

and further, in case such arrangement shall be made, the State Pomological Society be invited to draft plans for such hall, to be placed in the hands of the business committee for their consultation and possible adoption. Provided always, that the internal arrangements of such hall in its erection be placed under the direction of the Pomological Society. In case it is considered best to employ the same hall as in 1878, we recommend that the necessary amount appropriated for fitting the hall for the fair of 1879 be placed under the direction of the Superintendent of the Pomological department.

Fourth. We recommend that the business committee, in making arrangements for the transportation of material to and from the State Fair, take into consideration the perishable nature of the products exhibited in the Pomological department, and, if practicable, secure the usual reduction without the return of these products to the place of shipment.

We recognize the valuable work accomplishing through the efforts of the State Pomological Society, and while writing the above recommendation, feel that we express the sentiment of the State Agricultural Society, when we say that we cordially extend our sympathy in the prosecution of the work of developing the horticultural possibilities of Michigan.

J. Q. A. BURREINGTON,
W. H. COBB,
H. O. HANFORD,
Committee.

At the Lansing meeting, the disposition of the fruit catalogue was arranged; Superintendents of State Fair elected; Mr. Eli Bidelman appointed to fill vacancy on finance committee; amendments made to the premium list; Legislature petitioned to add two thousand to our printed reports annually; and the June meeting placed at Muskegon.

At the Kalamazoo meeting, a resolution was adopted to invite Mr. C. F. Wheeler to add to our next volume a catalogue of Michigan plants; action was taken looking to the future adornment of our capitol room; delegation to the Rochester meeting of the American Pomological Society appointed, and instructed to present invitations for that body to hold its session of 1881 in Michigan; resolution adopted to make an exhibit of Michigan fruits at Rochester, and the matter placed in President Lyon's charge.

The last meeting in Detroit was largely devoted to matters connected with the State Fair. The annual meeting and its location were placed in hands of president and secretary; notice given that at annual meeting an amendment to constitution would be presented, changing name of the society; and after the receipt of a number of applications for use of plates and clasps it was decided, under the circumstances, best to sustain former action and refrain from loaning or renting them to other societies.

PRESS AND RAILROAD COURTESIES.

The State press seem to have a thorough appreciation of the benevolence of the work of this society. The columns of every paper in the State have been thrown open to our use, in making announcements or publishing programmes and bulletins; I have been treated with great courtesy personally, by every newspaper office with which I have had any business or correspondence. Several railroads in Michigan are always ready to assist us in any way consistent with the welfare of their corporations. From President Hughart of the Grand Rapids & Indiana, and Superintendent Nichols of the Chicago & West Michigan, we have received especial favors, and they have repeatedly offered to do anything in their power to render effective the work of our organization. I am under personal obligation to Manager Alfred White and General Agent McKee, of the Detroit, Grand Haven & Milwaukee road, and General Manager John Newell of the Lake Shore & Michigan Southern road. It is on ac-

count of the privileges granted me by these four roads that I am enabled to get about at all among the fruit growers and gather material for assistance in planning our work. If similar privileges could be accorded the secretary on all the Michigan railroads, he could assist in the organization of local societies, which would help to upbuild the horticulture of special sections as we cannot do by our general meetings.

CORRESPONDENCE.

This year the correspondence of my office has been unusually large, owing to the issuing of the fruit catalogue and the gathering of opinions upon various topics which have been condensed in the miscellaneous papers of our volume for 1879. I was desirous of securing the opinions of prominent persons upon the two topics "grape rot" and "embellishment of country school yards," and to this end entered into a very extensive correspondence, the results of which you will find in the report of this year.

SCREENS, FORESTRY, STATISTICS.

At the winter meeting a resolution was passed instructing the executive committee to offer premiums upon wind-breaks and screens. The committee in carrying out the mandate of the society incorporated the following in the premium list:

DIVISION 8,—SCREENS.

The society is impressed with the conviction that the unchecked movement of the wind when allowed to come in direct contact with the surface of the soil, is calculated to greatly increase evaporation, and hence the tendency to drought and frost; while such winds are especially deleterious to the bloom of fruits, and to the growth of tender plants, and early vegetation generally.

As a means of inviting attention to a practicable remedy, the following premiums are offered: in awarding which, committees are instructed to do so only in cases in which such screens shall be suitably located for the required purpose: and also of sufficient height and density to be adequate to the object had in view:

Class 1—For the most perfect and effective screen for the protection of an orchard or garden, or both; reserved and maintained as such from the original or natural growth, not less than thirty rods in length, nor more than four rods in width; whether deciduous, evergreen or mixed. \$25.00 or diploma, at the option of the Executive Committee.

Class 2—For the same, when artificially planted and maintained for the above purpose; and of the requisite height and density. Same premium as in Class 1.

Class 3—For the most perfect, and best managed artificial plantation of Evergreen or Deciduous Trees, or a combination of both, properly located for this purpose; and not less than four by thirty rods, nor less than four years planted. \$10.00, or a Certificate of Life Membership in Society, at the option of the Executive Committee.

The only entries were made by Mr. Benjamin Steere, of Adrian, and as I was appointed a committee to visit and view Mr. Steere's entries, it seems proper I should give the results of this visit in the report of my work for the year:

The first entry was a double row of trees, extending north and south on the west line of Mr. Steere's place, consisting of red cedar, arbor vitæ, European larch, Austrian and Scotch pine, white pine, American tamarack, and perhaps scattering trees of other sorts. The line is thirty-five rods long; the trees stand nearly or quite forty feet in height, and many of them will measure three feet in circuit at the base of the trunks. They were planted in 1857, and quite thickly together, so that as they have crowded each other, the proprietor has had opportunity to show his courage to do what most men would shrink

from, to wit: Thin out the screen, often having to take out choice specimens that had been his pride, in order to preserve the remainder in good shape to act as a screen, and still not lose the peculiar habit of the species.

At the south end of the line of trees is a school yard, which Mr. Steere has planted to evergreens in variety, thus connecting the line of screen with the lines of hedges, one of arbor vitae and the other of hemlock, which extend in lines on two sides of his house. These hedges have been planted eleven or twelve years and stand seven feet in height, and are kept nicely sheared. Connected with these hedges, as a sort of background, viewed from the house, are groups of large evergreen trees, the whole giving a complete protection for the premises on the three sides at which most of our severe winds seek entrance.

Mr. Steere informed us that on account of this protection his thermometer registered higher invariably during the winter months than at other places in his neighborhood unprotected; and, what seemed quite remarkable, the screen was a protection from summer heat, thus rendering the temperature more even throughout the year.

The second screen entered was more beautiful but not more serviceable. It bounded a nursery on the south, west and northwest sides. It consists of Norway spruces planted ten feet apart, which stand very evenly, thirty-five feet in height, and were set out only ten years ago. This last screen is a good example of how quickly one can secure an evergreen protection from our severe southwest winds. It does not require a life-time. In a decade Mr. Steere has a model screen thirty-five feet high, upon ordinary gravel loam. The outlay at the beginning is very slight, and any one will get pay for the care given, in the satisfaction returned by the growth of the trees; and before one realizes that he is ten years older he has a beautiful and serviceable wind-break.

As the forests are cut off and the wind has a better sweep of the country, we must seek protection of this kind for our houses, stock, fruit and grain crops. The sooner we begin in earnest the better. Let Michigan farmers generally follow the worthy example of Mr. Steere and each one will have a part in emphasizing the motto of the State: *Si queris peninsulam, amenam circumspice.*

Several papers have been contributed to the proceedings of our society by our worthy member, George Taylor, of Kalamazoo, on the subject of forestry. He has started upon a matter that demands our earnest attention, and whether our name be "Pomological" or "Horticultural," our object should include this matter of preserving and growing forests. I submit whether it is not wise for us to begin the gathering of statistics in our own State, for the purpose of getting the people to better understand the necessity we are fast reaching, of growing and maintaining plantations of trees for timber and protection. And while suggesting the subject of statistics, is it not wise for us to be preparing for the next legislature some plan for gathering statistics on horticultural matters that shall be available in demonstrating our progress in horticulture to others, and assisting in proper encouragement among ourselves.

THE ORCHARD COMMITTEE.

For several years now we have abandoned our orchard viewing, with the intention of taking it up again when it would exercise a good influence in the orchard interest. I have received a number of letters inquiring about the time when this department of our work would be resumed, and it seems to me that the ensuing year will be a propitious one for again taking hold of me

matter; and my suggestion is, that coupled with it be placed screens and country school grounds as well as truck farms. This is the ground we have been actually covering in our meetings, and why not incorporate the same objects into the arrangement for our orchard viewing. I would have this committee appointed at the outset of the year and give the whole plan of procedure into their hands.

CONCLUSION.

In concluding my annual review and suggestions, I have but a word to offer, and that regards the awakening of an interest in our work that shall be *self-feeding*. If we can but do this, we have only begun the work that we may do; but if the enthusiasm and interest must be warmed by a few workers at each successive meeting of the Society, the work that may be done will be done very indifferently. Let us seek by broadening our endeavors to interest those engaged in all the departments of the great field of horticulture, and work together as a harmonious whole. The name that we print on our banner then, will not signify so much as the declaration of our objects.

REPORTS OF THE TREASURER.

The report of S. M. Pearsall, treasurer of the society, was next given to the society, which showed a good balance on hand, the details of which are given on a future page of this volume.

By resolution of the society, all of the reports were accepted and ordered placed in the Transactions of the society for 1879.

Judge Ramsdell communicated to the society the fact that his brother, Mr. T. J. Ramsdell, of Manistee, held \$50 subject to the call of the society, explaining that it was an appropriation made some years ago in accepting a box of the Transactions of the society.

A vote of thanks was tendered Mr. Ramsdell for acquainting the society with so pleasant a statement, and the secretary was instructed to receipt for the money and pass it to the general account.

The executive committee in the mean time had voted, in appreciation of the services of President Lyon, the sum of fifty dollars.

ELECTION OF OFFICERS.

The society next proceeded to the annual election of officers, A. G. Gulley and Jas. Satterlee being appointed tellers. The officers chosen were:

President—T. T. Lyon, of South Haven.

Secretary—C. W. Garfield, of Grand Rapids.

Treasurer—S. M. Pearsall, of Grand Rapids.

Vice Presidents—A. O. Winchester, Berrien county; B. G. Buell, Cass; J. D. W. Fisk, Branch; C. R. Coryell, Hillsdale; Dr. W. Owen, Lenawee; W. C. Sterling, Monroe; A. C. Glidden, Van Buren; E. Buell, Kalamazoo; Dr. Hauxurst, Calhoun; H. W. Doney, Jackson; J. D. Baldwin, Washtenaw; E. W. Cottrell, Wayne; Lyman Lilly, Allegan; A. C. Town, Barry; A. L. Sturgis, Ingham; Kendrick Sexton, Livingston; C. K. Carpenter, Oakland; D. B. Briggs, Macomb; Aloys Bilz, Ottawa; Wm. Rowe, Kent; W. D. Arnold, Ionia; S. S. Walker, Clinton; C. F. Goodhue, Shiawassee; N. A. Beecher, Genesee; S. B. Peck, Muskegon; James Satterlee, Montcalm; W. O. Fritz, Gratiot; Wm. L. Webber, Saginaw; J. Q. A. Burrington, Tuscola; C. A. Sessions, Oceana; F. J. Dowland, Mason; S. W. Fowler, Manistee; J. J. Hubbell, Benzie; A. P. Gray, Grand Traverse; Wm. Mebert, Leelanaw; G. E. Steele, Antrim; C. F. Romer, Bay; Shepard Tibbitts, Newaygo; H. E. Hoard, Iosco; C. P. Reynolds, Alcona; E. A. Landphere, Emmet.

Members of Executive Committee—N. Chilson, of Battle Creek; Jas. Satterlee, of Greenville (for full term); C. R. Coryell, of Hillsdale (vacancy).

On motion the office of librarian was created, and Mr. Eli Bidelman, of Lansing, was chosen to the position.

The finance committee reported that when H. Dale Adams, of Galesburg, was treasurer of the society he retained moneys, and still has in the neighborhood of \$500, which he neglects to pay. The collection of this amount is in the hands of an attorney, and its payment secured by bonds given by Mr. Adams when elected. The attorney of the society has been directed to prosecute him and proceed against his sureties.

The meeting adjourned till evening.

Evening Session.

By special arrangement, the topic

PRACTICAL WORKINGS OF THE YELLOWS LAW

was taken up for the first hour of the evening, and the discussion opened by the following paper from the pen of Rev. J. F. Taylor, of Saugatuck:

The subject assigned to this paper may lead to a somewhat rambling discussion of a very important question; but in order to secure some degree of precision, we may look at it from three different standpoints:

1. What was the yellows law designed to accomplish?
2. What is it capable of accomplishing?
3. What has it accomplished?

The first question—What was the design of the yellows law?—is too patent to need discussion. In the early history of the disease, before its devastating power was known, law seemed unnecessary; but after years of experience by peach-growers,—after orchards had been laid waste and abandoned in nearly all of the old peach-growing districts of the east, and after the disease had well nigh ruined the once beautiful orchards of St. Joe—nothing less than the purpose of extermination could have stimulated those who sought for legal protection. The result of the first efforts to secure legal protection against the spread of the yellows was the law of 1875. But for reasons to which I need not refer, it was made applicable only to Van Buren, Allegan, and Ottawa counties. With such a law, for such a purpose, but very little could be accomplished. The people, however, in the peach-growing districts, were being educated by the agitation of the question and by the devastation of their orchards, to demand another law of wider application. In answer to this demand we have the law now under discussion. And we ask, what is this law capable of doing?

If we notice some of the specifications of this law, we find that the town board have no authority to make it operative by appointing commissioners, until after a petition containing five or more names of freeholders is sent to them asking for action. Where there is not a special interest in peach-growing this clause of itself is well calculated to make the law a dead letter. After commissioners are appointed the law does not require them to do any work until complaint is made in writing and on oath that the disease is believed to exist on certain lands within the township. When they have exam-

ined the trees specified in a written complaint, they have no more work to do until another complaint is made. If there is much apathy on the part of the people as regards the execution of the law, this section (3) will make it a dead letter. If anything more is needed to make this law difficult of execution, it will be found in section 8. We forbear to put any construction upon it, as we have never made the study of the law a specialty, and think it too complicated for any one but an expert. In view of these difficulties you will ask: Has this law accomplished nothing? We answer: It has accomplished much, very much. We wish it had accomplished more, but are thankful for small favors. Law is respected and obeyed by different persons for different reasons. Some out of respect to the authority of the State and the good of society, readily comply with every legal enactment. Others are influenced by fear, having no special regard to justice or equity; while others still are greatly influenced by the benefits which may accrue to them through obedience. While human nature is what it is, that law will be most faithfully obeyed which appeals most fully to all these motives. A good citizen does not wish to be known as an outlaw. He is jealous of his honor as well as of his rights. Hence, if there is a strong public sentiment in favor of any well-meaning law, few men will stand out openly against it.

This law on the yellows is evidently a new kind of legislation. Even our law-makers seem to have been feeling their way along as if they were traveling a new road. And it is indeed a new thing for a legislative enactment to send men into our orchards and direct them to cut down fruit-trees—trees that have been planted by our own hands, watched and trimmed with a special interest, and cultivated from year to year with tender care. At first it looks like an invasion of personal rights, and some have been ready to say, "It may be law, but is it equity?" The first impulse of not a few fruit-growers, who had only a limited knowledge of the yellows, one year ago, was that the law of suppression was unjust and oppressive. Viewed without regard to the facts as they appear in the history of fruit-growing where this disease has prevailed, the impulse of resistance might have a semblance of justification. And hence we see why it is that there have been numerous threats of resistance, even to the act of shooting the commissioner who should dare to touch a tree. A prevailing sentiment of this kind in any community where the yellows exists would make this law entirely inoperative; and were it not for charging honorable men with duplicity, we might conclude that this law was framed without any backbone, so as to bow readily to any public sentiment where it might be called upon to do its work. If all were in favor of extirpating diseased trees, the law would be executed by common consent; if all or nearly all were opposed to it, there would be no power on the throne to make it effective. Yet this law, with all of its inherent weakness, has accomplished very much through the influence of a healthy public sentiment. The importance of destroying diseased trees has so pervaded the minds of fruit-growers in the "peach belt" that commissioners have been able to go beyond the law and examine orchards without legal authority, and in most instances have their requests complied with in the most cheerful manner. Our people say to their commissioners, "Go through our orchards and mark every diseased tree and we will cut them down." And not a few cut down diseased trees before the commissioner has the opportunity of an examination. The idea that there is any value in a tree that has the yellows, has almost entirely given way to the more rational one, that it is a nuisance, injurious to the man who owns it, and to all who have peach orchards around it.

Legislators who make our laws, and justices and judges who execute them, may be slow to come to this conclusion, and doubtless will be, if they have no peach trees to convince them of the truth, but most of those who felt the blighting hand of the destroyer last year have come to this decision and this year cut down their affected trees without the aid of a commissioner. Two years' experience and a view of the St. Joe country has taught our people that "an ounce of prevention is worth more than a pound of cure." Nearly every one who was reluctant to cut down the first trees which showed signs of the disease, thinking that time and trimming would affect a cure, has now become more than willing to "lay the ax at the root of the tree." Our great danger does not come from those who are actively and earnestly engaged in fruit-raising. These men are vigilant to resist the enemy; but those who look upon fruit as of secondary importance do not lose much if the disease prevails, and do not gain much if it is eradicated—these are the men who are slow to act and indifferent to success. When every man who wishes to grow a peach tree fully comprehends the *fact* that to retain a tree infected with the yellows means a rapid decrease in both quantity and quality of fruit, until nothing is left, he will not be slow to advocate the enactment of a law that will reach out a strong arm to lay hold on the luke-warm and the careless, knowing this, that "the law is not made for a righteous man but for the disobedient." Facts often speak louder than words. Let them testify to the disobedient and unbelieving. About the year 1873, Messrs. A. and B. of our town had each a peach orchard. These were at that time bearing fruit. Mr. A.'s orchard contained about 4,000 trees, Mr. B.'s about 200. Each man had a tree whose fruit was beautiful to behold and not unpleasant to the taste. With various reflections each man waited a year for further developments. These came with the next summer. Mr. A. heard of the yellows and his tree was identified as a victim. He looked up and saw the dry bones of St. Joe peach orchards in the offing. He was not slow to comprehend what might be the progress of the fell destroyer. He removed his tree with great dispatch, as he would a viper from the bosom of his family. Mr. B. also heard of the yellows, but to him it was like the sound of distant thunder which seldom portends more than a shower that will soon pass over and leave a brighter sunshine. Mr. B.'s tree sickened and died, but not until its virus had been well disseminated and absorbed into the circulation of surrounding trees. Mr. A. followed the digging-out process. Mr. B. followed the trimming process to arrest the disease; and now, after a lapse of six years, the former has removed less than twenty of his 4,000 trees, while the latter has cut down more than fifty of his 200, and not a few of those which remain are ready to die. Such facts are more potent than law, and constitute the bone and muscle of the statute under which we are now working. Very many of our citizens have not, until recently, been well informed in regard to the symptoms and indications of the disease. Since these have been learned, most of them are not slow to act for their best interests. No one in our town has refused to cut down diseased trees, but some are slow to act and need a sharp law to help them.

REPORT OF D. B. WILLIAMS.

Mr. D. B. Williams, a yellows commissioner of South Haven, continued the discussion by giving his annual report as follows:

I commenced the examination of orchards about the middle of June, and continued until about the 18th of October, during which time not a week has

passed, and in many cases not more than a day or so elapsed, without my being in some of the orchards, thus giving me an opportunity to personally observe the development of the yellows throughout the fruiting season.

In a book procured for the purpose, which I design to leave with the society, I have set down the names of owners, number of trees in their orchards, and the number affected with the yellows. There are some 250 of these places which I have examined and counted the trees, except in those places where the owners could give them.

August 1st, 1879, I found the percentage of loss to be 2 per cent. At the close of the season I found the total number of trees in orchards examined 62,856; of these 2,245 showed yellows in its various stages, giving 3.56 per cent. of loss for the season. By reference to my book, it will be observed that many of the places examined are gardens and small places within the corporation, and that these show a much larger percentage of loss than those outside. Taking what may properly be called our orchards, the figures will probably show the loss to be about 3 per cent.

It is also proper to state, what most of you are aware, that many of the affected trees were condemned and marked last year, but not removed; also many not marked either showed symptoms or were affected the previous year, thus making it difficult to give the exact percentage for the present year.

As a general thing parties have been prompt in removing diseased trees, and there seems to be a good feeling and a strong determination to take out and destroy all trees affected. This work has been done so thoroughly the past year that I think there will be very few trees remaining, so that another year we will be able to obtain a very accurate percentage of a year's loss.

J. C. Gould, of Paw Paw, a commissioner, had found but twelve new cases for this year, and the per centage was less than five for all cases in his township (Antwerp), for two years. He thought there was too much red tape about the law, but they had managed to enforce it pretty well. He thought the disease was traveling eastward at the rate of about six miles per year.

H. P. Waters, Lawton.—The fruit-growers of our section, as a rule, have an eye for business, and kept that eye open to watch for the least sign of the yellows, and as soon as it appears in a tree, that tree is taken out and destroyed, root and branch. We started in the spring with the resolution to fight the yellows on this line to the end, and I think we are gaining the victory. I took out 28 trees in my own orchard a year ago, and only four this season in an orchard of 5,000 trees. The four of this year were in the immediate vicinity of those taken out last year. I could cite a dozen other examples in the neighborhood quite similar in character.

I think if close watch is kept and all trees taken out as soon as the least signs of the yellows are developed, we can raise peaches with profit for the market in our section for years to come.

There has been taken out this last summer in the orchards about Lawton, 60 trees affected with the yellows. There have been 21 complaints issued in the township of Antwerp, comprising about 100 trees. There has been no serious resistance to the law in this vicinity; it works well. The most of the complaints that were issued were for seedling trees in neglected spots. I do not think there was a complaint made out in our township against a single fruit-grower who was growing fruit for the market. As I said before, so soon as there was a suspicion of the yellows our fruit-growers rooted out their trees.

The hour having arrived at which it had been decided to resume the regular programme, the president announced the topic as

HOW TO USE FLOWERS IN THE CHURCH, THE HOME, AND THE SCHOOL ROOM.

The first speaker was Rev. Charles Fluhrer, of Grand Rapids, who gave a very entertaining address, which was listened to throughout with the best of attention. It is impossible to do justice to the speaker by giving an abstract; but as the address was given from notes only, the readers of this report will have to be satisfied with the following abstract:

FLOWERS IN THE CHURCH.

The use of flowers in temples and on religious occasions is very ancient—may be said to be universal. In Polynesia, the rude natives appear on occasions of religious solemnity with garlands worn upon the head and neck. The Hindoos employed them profusely, it being recorded that in the thirteenth century it was a rule to offer 100,000 blossoms daily, and each day a new variety, in the temple at Dambedenia. The ancient Egyptian appeared in his temple to worship carrying the lotus in his hand. Among the Greeks, garlands were left hanging on the altars till they faded. The Romans burned the laurel in sacrifices, and the rich offered bunches of violets to the gods. The Hebrews used flowers lavishly during the joyous feast of the Tabernacles; and in the Christian church, whose cheerful message of “good tidings” seems ever appropriately illustrated by these gifts of heavenly love, flowers have been employed to set forth the teachings of the Savior,—notably the lily, the passion-flower and the evergreen.

In decorating churches, general effects as well as artistic arrangements should be carefully studied. Columns and niches afford opportunities for decoration which the ingenious and tasteful should be quick to take advantage of. The altar, of course, is a central point for display, and the usually bare spaces between the windows may be occupied by appropriate designs. As we have great space and distances to deal with, large flowers, such as peonies, rhododendrons and lilacs, which are considered “coarse” in the home, may be used with good effect in the church. Large urns filled with ferns and blossoms may also be brought into service. The altar or chancel should not be “cluttered.” Two or three elaborate pieces—say a pyramid on one side and a hanging basket or emblem on the other—standing out in relief will produce a much better effect than a promiscuous assemblage of potted plants. A basket on the communion-table and a baptismal font if there be one, filled with flowers and drooping vines, always show to good advantage. Do not put too many flowers on the desk,—a simple bouquet and others on a stand adjacent will be much better. Flowers in windows produce a good effect, but always put them in vases or some appropriate setting—never in pitchers or other ungraceful receptacles. Designs such as wreaths, crosses, anchors, etc., may be used, but they should be constructed on a firm foundation, the outlines distinct, so that no interpreter will be needed to tell what they mean. Growing-ferns, placed in tins filled with earth, and ivy vines, may be kept for weeks or months together. Artificial flowers should be used sparingly, if at all. In winter, when flowers are scarce, ivies, holly, cedar or creeping-pine, which are easily procured, may be wrought into appropriate designs. For Christmas, use holly, ivy, laurel, box or cedar; for Easter, lilies, passion-flowers, pansies, violets, azaleas. White should prevail. In preparing flowers for church, it

may be well to remember their religious significance. The lily symbolizes the Virgin Mary, humility, purity; the rose, the Savior; laurel, victory, constancy, glory; the pansy, charity; the violet, modesty; snowdrops and marigolds, virgin purity and truth; the ivy, immortality.

FLOWERS IN THE HOME.

These may be grouped under three heads—growing, cut and preserved. Pot plants have the advantage of permanency over cut flowers. In their successful cultivation four things should be observed: that they have sufficiency of water, light, fresh air and frequent baths. In all cases the common earthen pots should be encased in larger ones of china, ornamented lattice-work, or paper covers tastefully decorated. These may be placed in windows, or on brackets—in the latter case if possible, vines should droop gracefully from the pots. Hanging baskets, if made of wire (which should be painted dark green, and never a bright color), are beautiful window ornaments. A window box made of wood, lined with zinc, suspended by four cords, up which creepers should be trained, will admit of a good variety of plants and vines. Wire stands, sometimes arranged in tiers for the better accommodation and display of plants, will be found very useful for windows. In these let the plants be well grouped, the larger or bolder ones in the center, soft-wooded ones as near the window as possible—hard leaved plants, as palms and ivy, grow in any part of a well-lighted room. Do not train beautiful trailing vines over stiff, ugly ladders, but have them droop gracefully from basket or bracket. Ivy grows in the shade and may be trained around doors, over couches or picture-frames. In the latter case, plant it in a wedge-shaped zinc which may be fastened behind the picture, the vine only visible.

Cut Flowers.—These should be severed with a sharp knife, never with scissors, nor pinched off—since in the latter cases the compression of the stem will retard the absorption of the needed moisture. Artificial stems for flowers like the camellia, may be made by piercing them with three or four small wires just below the center and carefully twisting the wires together. Cut flowers can also be saved from prematurely falling to pieces by inserting a drop of gum in the center. Side-boards, tables, mantels, etc., afford excellent places for the display of cut flowers. If the former has a mirror, a basket or bouquets, or an arch may be made to show to fine advantage. Tables, whether center-tables, or dining tables—and too few ladies seem to realize how much more inviting the latter are if adorned with flowers—may be ornamented with baskets, either of glass or wicker-work—the handles always to be covered with some delicate vine. Vases for bouquets should be of some delicate tint—never of a dense color. Select those which are wide at the top—trumpet-shaped are the best as most graceful, and permitting the arrangement of drooping vines. On a table there may be a glass dish filled with flowers; and a pyramid built up of dishes and vases, makes one of the most beautiful of center pieces. The mantel, especially if it has a mirror at its back, affords a fine opportunity for floral display—a basket or vase in the center or perhaps shallow troughs made of zinc, filled with flowers and drooping vines at either end.

Under the mantel is a place where, in room of a cheap,—perhaps gaudy screen,—an ivy may be trained over a wire network fastened to a box lined with zinc, and either painted some delicate color or ornamented with colored tiles.

DRIED OR PRESERVED FLOWERS AND GRASSES.

These may be arranged most effectively in a house. The lightest and graceful grasses should be selected in the proper season, and dried so as to preserve their natural form. Do not disfigure them with any artificial preparation. Different kinds of everlastings may be mixed with these grasses of which nature to the keen observer is so prolific. Much can also be done with ferns, which may be preserved so as to retain their original shades. These can be made to fringe baskets or surround mottoes; but do not plaster the walls with them. Mottoes can also be formed of pressed geranium flowers and pansies,—mottoes that may exceed in beauty anything which Prang may furnish and that the most skillful needle may construct of card-board and worsted and silk.

Following Mr. Fluhner's address, Rev. J. Sailor, of Allegan, gave a paper upon the same topic, which we are enabled through his kindness to give in full

ESSAY BY MR. SAILOR.

The emotion of beauty is innate in every human being. Unless perverted by vice or crushed out by crime, objects of taste interest and charm the mind. They are always pleasing and never cast a shadow, leave a void or append a sting. The love of the beautiful commences in early childhood, and never leaves us until the light of earth mingles with the dawn of eternity; and then emerges into the deeper beauty and diviner splendor of heaven. The infant in its cradle grasps gladly at the beautiful flower; and mature years but intensifies the emotion. And unless sin obliterates the normal feeling, this "beautiful fountain will keep fresh in the heart, and as man's days advance and his shadows lengthen and his senses grow dull, he can still look with all the admiration and delight of his childish years on whatever is beautiful in the works of God and man."

Flowers are the smiles of God to cheer and comfort the sad heart and revive the wan cheek. Like all the gifts of God, they are free to all who have minds to admire and taste and energy to cultivate them. The works of art are confined to the few. Only the prosperous can see and the cultured admire the works of Raphael, Michael Angelo and Titian. But everyone that has a sense of the beautiful can look upon these children of the sun and the shower. Nor do we need elaborate conservatories from which to gather these choice products of nature and art. The humblest home can be adorned with their beauty and fragrant with their perfume. Nor do they grow alone at the bidding of man; but the hand of the Great Giver spreads them everywhere—at our feet, by the roadside, in the wood, in the valley and on the mountain do these smiles of His beneficence dwell, and bear on their fragrant wings and graceful forms His goodness and love.

"God might have made the earth bring forth
 Enough for great and small,
 The oak tree and the cedar tree
 Without a flower at all;
 We might have had enough, enough
 For every want of ours,
 For luxury, medicine and toil,
 And yet have had no flowers.

"Then wherefore, wherefore were they made,
 All dyed in the rainbow light,
 All fashioned in the supremest grace,
 Upspringing day and night;

Springing in valleys green and low,
 And on the mountain high,
 And in the silent wilderness
 Where no man passes by.

“Our outward life requires them not;
 Then wherefore had they birth?
 To minister delight to man,
 To beautify the earth;
 To comfort man, to whisper hopes
 Whene'er his faith is dim;
 For whoso' careth for the flowers
 Will care much more for Him.”

And if this beneficent attribute of their mission be a fact, then we can see why they shall have a place in our homes, our schools and the church of Him “who is the chief among ten thousand and the one altogether lovely.”

If the emotion of beauty gives joy and carries gladness in its train, then every home and every thought in that home should be redolent with these bright children of taste and purity.

Methinks the rising angry clouds that sometimes rise in the domestic sky would be allayed in the presence of flowers; that these smiles of God would draw the lightning back from the cloud of passion and restore sunshine and peace.

And when the deep shadows of intemperance blight the hopes of the wife and the mother, can she not turn to the flowers as on the face of God and draw comfort from the thought that He who smiles upon the rose and the calla will grant her the peace that will still the wild throb of her soul?

“Make your home beautiful—bring to it flowers.
 Plant them around you to bud and to bloom;
 Let them give life to your loneliest hours—
 Let them bring life to enliven your gloom.
 Make your own world—one that never has sorrowed—
 Of music and sunshine and gold summer air;
 A home-world whose forehead care never has furrowed,
 And whose cheek of bright beauty will ever be fair.

“Make your home beautiful—weave round its portal,
 Wreaths of the jasmine and delicate sprays
 Of red-fruited woodbine, with gay immortelle,
 That blesses and brightens wherever it strays.
 Gather the blossom too—one little flower,
 Varied verbena, or sweet mignonette,
 Still may bring bloom to your desolate bower,
 Still may be something to love and to pet.

“Make your home beautiful.—gather the roses
 That hoard up the sunshine with exquisite art;
 Perchance they may pour as your dread darkness closes
 That soft summer sunshine down into your heart
 If you can do so, oh, make it an Eden
 Of beauty and gladness; remember 'tis wise;
 'Twill teach you to long for that home you are needing,
 That heaven of beauty beyond the blue sky.”

And surely in the school where the young are being trained for the duties of life, what can more easily and certainly soften the rough-made nature of the boy, and refine and elevate the budding charms of his gentle sister! I would have the school grounds laid out with taste by the landscape gardener; adorned with evergreens and flowers of every form and beauty. On many a boy and

girl it would be a vision of beauty and taste that would forever onward propel them along the lines of culture and virtue.

And what can more fitly decorate the walls and altars of the Church of God, than flowers in the various forms of beauty and taste they assume under the hands of those who were "first at the sepulchre and last at the cross." And as we bring these beautiful tokens of our Heavenly Father's love to adorn the temple of God and the Sunday-school room, we can say with emphasis with him who is the rose of Sharon and the lily of the valley, "Come unto me all ye that labor and are heavy laden, and I will give you rest;" "Suffer little children to come unto me."

We thus throw around the worship and instruction of his house the charm which a God of nature and peace gives the lily and the rose. And as we form them into stars of stainless white they remind us of that "star in the east" that guided the wise men to the cradle of the Redeemer of the world. And then again, as under the deft fingers of love and taste, they assume the form of shields, their matchless beauty calls to mind the shield of faith which enables us to overcome the great adversary of souls, and defend the faith once "delivered to the saints." And again, as they become harps and lyres under the cunning device of woman's loving art, they sympathize the songs of the Redeemer the sweet richer music that will swell upon the ear, when the worship of earth deepens into the seraphic praise of heaven.

And when the name of "Jesus" looks down upon us in the matchless purity of flowers, what can make more attractive and charming, the foundation of all our hope, the joy that underlies all the shadows and sorrows of earth. And will not these beautiful emblems of spiritual truth and their exquisite adornment of the sanctuary lead us from nature up to nature's God, through outward manifestations of His wonderful creations to the love and service of his brighter, sweeter, richer worship in the paradise above.

Secretary Garfield read an essay prepared by Miss Emma Field, of Grand Rapids, prefacing it with remarks of his own. He made several pictures for the audience of places where flowers were employed in exquisite taste. One of which was a little flaxen-haired child on the lawn in the sunshine playing with a hat full of wild flowers. He suggested in a jocular way that there were cases where flowers were out of place. When we get a window so full that a man can't see his neighbor's wife go by, it is carrying the thing too far! He spoke of the use of flowers in bad taste as ornaments. Those who love flowers will use them tastefully, and people should use them because of a liking for them, and not because, as they wear cardinal ribbons, it is fashionable. He said children should be early taught the names, structures, habits of growth, and uses of flowers, and called to mind the little girl of a beloved teacher of his, who would spend hours together, gathering flowers with her father and pulling them in pieces learning the structure and parts.

The essay of Miss Field dealt wholly with

FLOWERS IN THE SCHOOL-ROOM.

Once upon a time (pray do not imagine from this old-fashioned beginning, that I am about to tell you a fairy story), my guide took me through a lovely valley.

For miles the road was sheltered by great over arching trees whose branches half met, and made the way seem like the entrance to an Eden. On either side stretched large farms, with their wealth of verdure, and orchards of fra-

grant bloom. The farm-houses nestled among green foliage and clustering vines, and I could almost scent the fragrance of the roses, which I knew would fill the air with perfume in the coming June.

We left our level road, and after crossing a brook which wound like a silver ribbon among the meadow grasses of the valley, began to ascend a hill.

On the height was situated a building in a lot destitute of trees or shrubs.

And then I knew that we had reached our destination, for there was the *school-house*. The grounds always look just so, I said to myself. There is the same clay soil, the same broken down fence posts, the same broken down steps, scattered wood, and untidy appearance everywhere. Just as the sun always shines in at the east windows each forenoon, and pours in at the south door in the middle of the day, and for change beats in remorsefully at the west windows until four o'clock.

To be sure, the view is a beautiful one, and I looked down the valley, where each farm-house seemed so sheltered and cool in the distance. I could almost feel the grateful shade of their wide vine-covered piazzas looking toward the wells with their dripping buckets. How the children must love to leave their homes on summer mornings, I said, and climb this stony hill, when the thermometer reaches up in the nineties.

And I thought with a faint sigh of relief, how if I were stationed there, I would wisely teach the geography of the cold regions in the summer-time, lingering among icebergs and glaciers, and frozen oceans, until frost came, and then warm myself by the tropics in January.

I prepared to descend from the carriage. "No," my guide said, "this is the town-house, in the center of the township. I only brought you here to see the view from this hill. Do you think the people living in those pleasant homes yonder, would send their children to pass half of their waking hours in a place so utterly devoid of beauty as this?"

"No," I answered faintly, "I never thought such an inhuman thing."

"Do you think those parents would be happy in their homes, surrounded by all that makes home life beautiful and comfortable if they thought their children were not enjoying the same?"

"No," I again said, "I am sure they would not."

"Would parents, who desire that the memories of childhood should be among the pleasantest, brightest of life, dare to have their children grow up among unpleasant surroundings?"

"No, no!" I said emphatically, "*never*."

With an indignant look at me because of my mistake, my guide turned the horse's head and slowly descended the hill up which we had just come, saying, "Now, I will show you the school house."

We turned aside from the well beaten road and followed the windings of the creek a few rods and came to a pretty building set down in a large yard decorated with beautiful trees, and enclosed by an ornamental fence. I gave but a hasty glance at the outside surroundings, but my impression was a pleasant one.

The whole seemed like the exterior of a cozy home-like dwelling. I caught glimpses of vine-covered trellises and rustic seats under the trees, of an emerald lawn, and a play-ground beyond.

At the east and south my guide directed my attention to two well-kept flower beds, which were already fragrant with early spring blooms, among which I noticed the children's favorite pansies, while many tender little annuals gave promise of rare beauty and brightness for the coming days. I noticed the

heart-shaped leaf of the morning-glory under two of the windows, and I could almost hear merry voices in the early mornings exclaiming at the wealth of bloom on the clustering vines, and counting the many colored bells lifting up their faces to the eastern sun.

My guide now pulled me by the sleeve saying, "Come and see what we can find within." Rows of healthy, happy children looked up from their books as we entered, and watched us with interested faces as we looked around the cheerful room. Their expression said as plainly as words, "We helped make our room pleasant,—we own a share of those flowers, for we have tended them with our own little hands. We are proud and happy over it."

The sunny south windows were filled with healthy, vigorous plants, among which I noticed the favorite rose, with its many budding growths, fragrant heliotrope, and those ready bloomers, scarlet geraniums, begonias and petunias. The common madeira vine was reaching up its strong shoots, and I knew that in a few weeks the windows would be encased with its clustering tendrils. On brackets and in shady corners, that little vine which thrives away from the sunlight, the Wandering Jew, drooped its graceful stems on the tinted wall.

"Do the children care much for these?" I asked the teacher.

"They are much interested in all that we do to make our school-room pleasant," she said. "The boys sawed the baskets and many of the frames. For the others, and for some of the pictures they have contributed their pennies. Some have been donations from the patrons who have become interested in us, through their children. They have brought leaf mould from the wood, and many offerings to our floral treasures. We are to have a holiday this afternoon and take a walk in the woods, where the botany class will have a lesson and gather leaves to analyze next week, and all of us will gather ferns and mosses for the shaded north side of the house. A few were put there last year, and they have thrived nicely. The roots of some liverleaf and anemone lived and blossomed luxuriously there this spring. The children were so happy over it, because their own hands had placed them there. I take care of the plants in the south windows, and see that we have those kinds that will reward us most richly for our care. When a plant is at its height of beauty, I place it on my table where all can see it, and the children say they can all study the better because of its cheering presence.

"Last week our rose delighted us with fifteen buds and blossoms. The boys are fully as enthusiastic as the girls, and always ready and anxious to help care for the plants. I give them all a few hints concerning the culture of flowers, and the parents tell me they have already begun to care for and watch over those at home, while those who live in homes destitute of such beauty have become interested in obtaining them. We have had excellent success in starting slips in these sunny windows, and so keep in hand a number of young plants for another season; and also divide with those who have none.

"No one can tell of the love of beauty awakened here which will always go with these children through life, making each day happier and brighter and many homes glad. Down by the mill is a miserable little hut, where a family of Hollanders live. It is wretched and dirty, like its inmates. The oldest boy, a bright little fellow of ten, has taken no interest in our flowers until yesterday. I saw him pass that lovely fuchsia there, with its wealth of graceful flowers, and stop and look on it as if some latent love of beauty was slowly developing in his nature, then he reached up his grimy hand and softly, tenderly touched it. At night he came shyly to me and, in his broken language, said his

mother would like a slip of that. Do you know, I believe that plant has quickened a germ in his soul which will never die! Do you believe his home, his surroundings, will be like that of his parents?" And tears stood in her eyes as she talked.

"If I taught in the city and many of my pupils came from the poorer wards, among tenement houses crowded together on the dusty, dirty streets, where God's little ones know nothing of the beautiful country, with its fresh air and green fields, I would be all the more anxious to make my school-room a beautiful home for them. See," she continued, as we moved towards the door, "this is the children's flower stand. Here they arrange bouquets in these vases and glasses, and I look on and give them a hint sometimes of what constitutes grace and beauty in their arrangement. Even the boys love to arrange bouquets, and I offer a premium for the prettiest, by promoting it from their table to the vase on my desk. I remember that last June I surprised them all by taking for my vase a few sprigs of mignonette and one rose-bud, with its long stem and lovely leaves. After that no more full-blown roses, with short stems and drooping leaves, were brought without a protest.

"I have noticed that a few words about colors in a bouquet have had a marked effect on the colors worn by the girls in their ribbons and dresses; but I have talked too long," she said, as we lingered in the doorway.

"Oh, no; you have done me good. It cheers me to meet an enthusiast. God bless you, and may you live many years to carry on this blessed work." I glanced back at the bright room, with its pictures, plants and flowers. Just then a gleam of sunshine rested like a halo on the heads of the children, and transfigured their faces with its golden brightness. They no longer looked like children of earth but seemed endowed with a heavenly beauty, like the faces of those we read of beyond the river. The bright beams rested on the flowers and vines beyond, and they glowed like the flowers of a tropic clime.

I rubbed my eyes, and there was the sun of a June morning pouring in at the open east window. I had overslept myself; it was time to get up, or I would be late for my work. My school-house was an ideal one.

Friends, and all lovers of all that is good and beautiful, how long shall all this be merely a dream, a vision?

Prof. Beal remarked that the use of flowers with the children might very appropriately take the place of some of their sports—not that he would deprive them of the good times they have playing together, but by appropriate education the children would choose the flowers to play with; and while playing delight in learning and telling their names and the names and location of the different organs. It was his experience that very small children learned the scientific names just as readily as the more common ones. He hoped the time would come when lessons in oral botany would be a part of every common school curriculum. The next topic was:

HORTICULTURE AT THE AGRICULTURAL COLLEGE.

Prof. Beal from notes gave a very entertaining address upon the work at the college under his charge, and, although the hour was late, was listened to with interest to the end.

He said that, at the college, much of agriculture and horticulture was taught in entomology, chemistry, and botany. The horticultural work has been largely increased at the college, but to a great extent this branch of their labor

is under disadvantages, the soil of the farm being mostly unfavorable to the growth of fruit-trees. Most varieties of fruits are being experimented upon, also forest trees of various sorts, screens, hedges, etc. Their wild garden is a spot containing 400 varieties of native plants and trees, and is a favorite resort of students and is of great interest and value to all. He detailed the work of growing various sorts of grains, grasses, vegetables, etc. He had done some work in the way of testing seeds and found that the best of seedsmen sometimes sent out worthless goods. A course of eleven weeks of lectures, one hour each day, is given in the college, on horticulture, and the students have practical instruction in budding, grafting, etc., both indoors and out. Picking and packing fruits, plants, and scions are taught, and the crossing of species, and kindred subjects, are given due attention. Students are taught chiefly to help themselves and are put upon the road to success and expected to continue in it. During the first years they have a varied experience upon the farm, but in their senior year they are given certain work and kept at it. A new building will soon be ready for the preservation of collections of specimens of all sorts. Efforts are now making to secure land for a sample apple orchard. Many things, such as changes of the board of professors, a lack or an uncertainty of funds, are constant drawbacks to the success or even the undertaking of long-continued experiments.

The meeting adjourned till morning.

Thursday Morning.

The session was opened with a discussion upon the proposition to change a part of the name of the society from "Pomological" to "Horticultural." There were many speakers who expressed the opinion that the name was good enough as it is; that the society's work was broad enough now; that a change would in a measure rob the society of the prestige it now holds at home and abroad; that Michigan is more distinctively a pomological State, and the name and the work should correspond with this fact. The opposition urged that the support of the term "Pomological" came from the western part of the State, and was local, the interests of the eastern portion being in effect ignored; that nothing would be lost to the society by the change, as horticulture includes pomology and all kindred branches, and despite the name, the society's practice has been to include horticultural topics in its deliberations; that really the society has been sailing under false colors. Upon motion of H. C. Sherwood, the question was tabled.

Another resolution that was laid over from the Lansing February meeting recommending the use of hedges for fences was next taken up, and Mr. J. C. Ratcliff spoke of the efforts made in his part of Indiana, at growing hedges, representing them as abortive, and people were turning to wire fences. In the northern part of his state, osage orange hedges have been successful to some extent. He suggested painting wire fences some bright color, that stock may more easily see them and avoid injury. Mr. W. N. Cook, of Grand Rapids, found osage orange to be a failure generally, but Mr. Hanford, of Indiana, found them successful where properly cultivated. In Kalamazoo county, Mr. Buell said, there were hedges of osage orange and Virginia thorn which were proof against all stock. A vote was then taken and the resolution rejected.

A prolonged discussion upon symptoms and treatment of the yellows, occupied the rest of the forenoon, but nothing new, beyond what has been repeatedly printed in these columns, was brought out. There were some present, unacquainted with the disease, who received a good description of it.

Mr. Ratcliff made a general statement of the work of the Indiana State Horticultural Society, showing an encouraging state of progress and expressing sanguine hopes for future work. The society holds its ninth annual meeting at Dublin, Indiana, December 16, 17, and 18, this year.

Afternoon Session.

The committee appointed to consider the recommendations of President Lyon, made in his address, submitted the following report:

The committee recommend that the present plan of the fruit catalogue be continued, and that we especially commend the feature of naming and grading the varieties of fruit grown in the State.

We recommend that the future issues of the fruit catalogue, in pamphlet form, be of a sufficient number to meet the wants of those who are willing to pay the cost of printing.

We recommend that the matter of the annual exhibition in connection with the State Agricultural Society be referred to the executive committee.

We recommend the acceptance of C. R. Coryell's invitation to hold the February meeting at Hillsdale.

We recommend that the executive committee take special pains to institute some plan to unite the band of sympathy between the State and local societies.

That the executive committee endeavor to increase the annual membership by some system of prizes offered in that direction as to them shall seem best.

That the society ask the legislature to place the annual reports of this society at the disposal of the society in such a way that they may be used for the financial benefit of the association.

We recommend that a rule or by-law be added to our present by-laws, making the absence of any member of the executive board for more than two of its meetings in succession, without reasonable excuse, a sufficient cause for declaring the office vacant.

CHAS. W. GARFIELD,
BYRON MARKHAM,
S. B. MANN,

Committee.

The President announced the next topic as

HORTICULTURAL LITERATURE.

upon which Mr. F. A. Gulley, of the Agricultural College said:

There has been in the past, in the minds of a large portion of the country people, a strong prejudice against what they called "book farming," not only as applied to regular farming, but also to horticulture, and especially that branch which embraces fruits and vegetables. They believed that what they termed "practical experience" was the only true guide. What had been handed down from their ancestors, and what was practiced by themselves and neighbors, in the growing of different plants embraced all that was worth

knowing, and to attempt to follow any of the methods found in books or papers, written as they claimed by men who had had no actual experience in carrying out what they wrote about, was sure to result in failure.

The old-fashioned reverence for practical experience is not so far out of the way as we are sometimes apt to think, and the old fogies as they are sometimes termed were all right so far as their knowledge went, but they didn't seem to comprehend the whole idea.

All that has been accomplished in horticulture is based upon practical experience. We may theorize about what the effect of certain applications or practices will be on various kinds of matter or things; but when we attempt to make up a theory, the practice of which will modify or change anything that has life, the only proof is in the test.

The old astronomers after working out the laws of attraction and gravitation, were, by a series of calculations, enabled to tell where certain stars and planets were located, although they could not be seen. But we can't work out by any system of calculations what the effect of a certain method of pruning or crossing, or cultivation will be on a living plant till we try it. We may think it will have a certain effect, and may not be able to see how it can possibly be otherwise, but there is no proof till it is actually tried. All who have attempted to discover or prove any new method or practice as applied to living plants, or animals, know that anything of value is rarely found, as the failures are innumerable.

If the entire human family comprised but a handful of people all living near together and constantly exchanging ideas, there would, perhaps, not be so much need of horticultural literature, as the valuable things discovered would be handed down from father to son; but, scattered over the world as the human family are, there is no way to get what others have learned and are learning by experience except through books and papers, and, what is of equal importance, we can only in the same way learn something of the failures of others and be enabled to steer clear of the rocks upon which they foundered.

To know what has been done in any branch of horticulture is of value to every one who is carrying on something in the same line. He should know of the failures, as well as of the successes, because he should adopt the good and not go over the ground again that has proved barren. Too much time is wasted in trying things that have been tried before and found worthless. It is said that application after application is made to the patent office at Washington for patents that were granted or refused years before, many times for things that required months, and even years, to work up. We have the same thing in horticulture; but as we get to learning more, and have better books and papers, and have them more generally read and understood, we may hope to have less time wasted in this way. By studying the books and papers of to-day we get the experience of the world and for all past time.

It is often said that to be successful as a fruit grower or gardener a man must have practical experience; it is set down as the most important thing. Let us see if nothing more is necessary: Suppose it were possible to bring a man from some other world who was possessed of industry, intelligence and an ambition to be successful in something, but who knew nothing of our ways and methods; suppose he were given a fertile farm and induced to take up fruit growing, and was provided with an outfit of plants and trees in abundance, but not allowed to read any paper or book, or learn anything from his neighbors, how long would it take him to learn by practical experience the way in which to

do things? Could he hope to get even the rudiments of the business in his natural life time? On the other hand, give him books and papers and, if he is both studious and industrious, in five years he can be as successful as the most of his neighbors.

But let us look at the second charge against books and papers—that they are not written by practical men, and are full of theories and other worthless matter.

Suppose they were all theories, which is not the case, by any means, they would still be valuable. Men do not often stumble over or discover valuable things by chance. They are the result of careful study and thought. They theorize! What matters it?—if but one theory of a thousand is valuable, we want that one saved. Practical men study up these theories, and test by experiment those that promise anything of value, and although their failures are numberless yet every success may benefit mankind.

Some of the greatest discoveries and inventions have been worked out by men engaged in pursuits not at all related to that in which the invention is classed. Watts, the celebrated inventor of the steam engine, was a jeweler by trade. Many others can be mentioned.

It does not follow that a man educated for a lawyer, a doctor, or a professor of some branch of science, may not write a book or edit an agricultural paper that will be valuable. If they have good judgment, and are close observers, the professionally educated men can often grasp ideas that are too complex for the ordinary intelligence, and present them in so simple a manner that the average man can understand and profit by them. If a man is sometimes led into doing unprofitable things from what he has read, he should not condemn all printed matter; the same idea may be of value to others, or, if not, he certainly will not fail so often in trying things he reads about, as he would if experimenting by himself alone.

To be up with the times we must read the literature of the day, or be in constant communication with some one who is a reader.

With my limited experience in horticultural literature I will not attempt to tell you what is best or what to select in the way of books or papers. There is much that is valuable, but the greater number of us have not the means to procure all we would like; we must study therefore to get what will be of the most use.

In the Pomological report for 1876, a very good list of books on horticulture costing about \$100.00 is given by Professor Beal. Most men want a few good books; they have neither the time nor money to expend in the studying or buying of so many. I would recommend first some book that takes up the general subject as a whole for fruit growing. My first choice would be the *American Fruit Culturist*, by J. J. Thomas; price, \$3.75.

This book gives the methods of cultivation of all our ordinary fruits, and also a good description of the best known varieties of each kind.

Another good book is *Downing's Fruits and Fruit Trees of America*; price, \$5.00.

If I were specially interested in small fruits, pears, grapes, or any one branch of fruit culture, I would next procure a book that treats of that branch only. *Worden's Pomology* gives the most extended descriptions of apples, \$3.00. For grapes, *Fuller's* or *Strong's Grape Culturist*; \$1.50 each.

Fuller's Small Fruit Culturist, price \$1.50, is good on the small fruits. For a cheap book, *Purdy's Small Fruit Instructor*, price 35 cents, is excellent; while the five volumes of the *Fruit Recorder*, 1871 to 1875, are a regular Encyclopedia on the subject.

For gardening, Henderson's Gardening for Profit, is very complete, and popular; Money in the Garden, by P. T. Quinn, is considered by some better than Gardening for Profit; each of these cost \$1.50. In Floriculture, Henderson's Practical Floriculture is not excelled, price, \$1.50, for those growing flowers to any great extent; for the amateur, Henderson's Gardening for Pleasure, embraces both flowers and vegetables, and will be found valuable; price \$1.50. Injurious Insects, by A. J. Cook, 15 cents, is an excellent hand book to own. Every man engaged in fruit culture in this State should have the last five or six volumes of the Pomological reports; they cover the ground of fruit growing in Michigan more completely than anything else that can be procured, besides much other valuable matter. The set of Rural Affairs, eight volumes in all, price \$12.00, are very fine; they contain good articles on everything imaginable connected with farming or horticulture, and should be in every live farmer's library. There are many other books well worth buying if one has the means to procure them.

Of papers, if but one is to be taken, and that devoted to fruit-growing, perhaps the Fruit Recorder by A. M. Purdy, Palmyra, N. Y., will be as good as any.

For a journal which includes both farming and general horticulture, I think no paper in this country excels The Country Gentleman, published by Luther Tucker & Son, Albany, N. Y. The Rural New Yorker and American Agriculturist are both agricultural papers with good horticultural departments. The papers mentioned are a few of those I consider the most valuable.

There are papers, such as the Gardener's Chronicle, The Garden, foreign papers, and the Gardener's Monthly, published in Philadelphia, purely horticultural journals that would rank higher than those first mentioned, but they are designed more especially for the professional florist, botanist and scientist; they are not suited to the average farmer and fruit-grower, therefore I have not included them in my list.

Mr. Gulley closed by giving a description of Dr. Startevant's method of keeping notes by having boxes on a library shelf set up like books, and carrying slips of paper in the pocket that nicely fit the boxes. Each box is a division or subject, and as one comes in at night with slips filled with notes during the day they can be slipped into their proper boxes. If at any time then, one wants to get at all the information he has upon a topic, he has only to turn to the box devoted to the subject and turn out his slips of notes.

Geo. W. Bridgman, who was to follow in this discussion, was unavoidably absent, and sent a note to the Secretary saying:

"Do not fail to insist that for the farmer of Michigan and the horticulturist of Michigan the best of all books are the Michigan Agricultural and Pomological reports. * * * In this class of publications, as in all others, there is an immense amount of chaff and rubbish—yet very often a plump kernel will appear when least expected that may be the seed of a fruit-grower's prosperity. There is one article to which I desire to call special attention, as I believe it to be to the practical farmer and fruit-grower, worth at least a year's subscription to all the agricultural, horticultural, and pomological journals of the world, and that is an article by Prof. Beal, found on page 454 of the Michigan Pomological Report for 1877 entitled "Darwin's New Book," (the effects of cross and self-fertilization of plants). I had hoped to be able to be on hand to say a word concerning the objections to book farming with illustrations; yet after all, the failures in that line are no more caused by the errors taught in the books than is the failure of Johnson to become a success-

ful doctor or Jones to become an eminent lawyer on account of the books in their respective professions.

The chair announced the topic :

CULTIVATING AND PRUNING PEAR TREES.

Mr. Joseph Lannin, of South Haven.—I can give you simply my experience to open the discussion. My plan, when a pear orchard is to be planted, is to thoroughly prepare the soil in the fall of the year, for the purpose of destroying weeds, and having the ground well pulverized throughout. I would not dig holes for planting, but plow out bed furrows both ways, dividing the plat into squares of twenty feet on a side, setting the trees at the crossings. I would plant in the spring. Upon culture I put a good deal of stress; for the first few years I should give very thorough cultivation; I prefer to use a one-horse plow. This to keep the surface open and moist, allowing the sun and the rain to do better service. At the end of four years, I confess it is a question whether to still continue the culture or to seed the ground down to grass. In pruning, I believe each tree has a treatment of its own, and it is difficult to tell how I do manage. I trim out superfluous limbs and twigs in July or thereafter, and shorten in the new growth somewhat in the spring. If I were to plant out an orchard now for profit I should use but two varieties, the Bartlett and Beurré d'Anjou.

Question.—Have you the Duchesse?

Mr. Lannin.—Yes; a large pear, but I would not grow it for market.

Question.—Do you grow Beurré Clairgeau?

Mr. Lannin.—Yes; it is a good tree,—a coarse, large fruit.

Question.—Have you blight?

Mr. Lannin.—Very little; confined entirely to Flemish Beauty thus far.

A. G. Gulley.—Most of us buy too old trees. For our country we want to keep pear trees as near the ground as we can. I would buy yearlings and cut them down pretty well to the ground, causing them to branch low. I have a bit of experience with the Duchesse. I had some trees of this variety which blossomed but bore no fruit. One spring, before the buds swelled much, I took off full three-fourths of the blossom-buds from one of the trees. It was very full of bloom notwithstanding, and I had on it a good stand of fruit, while on the others, as usual, I had nothing. I am satisfied this work must be done before the tree blossoms or this result will not follow.

Mr. Merriman followed with an essay devoted especially to

PRUNING THE PEAR.

In the matter of pruning fruit trees, the proper rules of practice are extremely hard to give in detail, the rules laid down by the accepted authorities in horticultural lore being wholly at fault,—literally the “blind leaders of the blind,”—sounding well enough as theories of the authors, but in practice resulting in serious injuries and bitter disappointments. Perhaps the safest course I could suggest to the uninitiated and inexperienced, and most especially to the professional slasher of trees, would be to lock up the pruning saws, knives, shears, and pruners of every description, and throw away the key; or, better still, to smash the aforesaid implements of destruction into a thousand pieces and bury the fragments among the deepest of the pear roots, where the moiety of tonic fur-

nished thereby is far preferable to the wholesale slaughter usually wrought by them in such hands, ruining trees at the rate of a dozen a minute. I once bought a lot of Bartlett trees that the nurseryman had trimmed up according to his rules and notion. I did not consider them worth half as much as if his knife had never touched them, and told him so; but being the best he could do on Bartletts it was "Hobson's choice"—I must have the pear and I took them, with every twig and branch gone. I could have wept for them. But the effect was even worse than my apprehensions. Wherever the knife had struck, the black, deadly plague spot struck also, and spread downwards, blighting the whole tree, while no others in the orchard, of about 1,000 pears, were similarly affected.

Another instance I have in mind, is that of an orchard which was the pride of that region, with each and every tree a perfect model; but the itinerant grafter and pruner got hold of the owner and persnaded him it was in dire need of certain *trimming* that could be done by no one else; the usual results followed,—the orchard has been an eye-sore and nuisance ever since. The cheek and impudence of one of these slashers in orchards is something wonderful. Walking along the rows, perhaps praising the soil and culture, he whips out his death-dealing-pruner,—his voluble tongue the while playing as glibly as his knife,—says "there! that's how I should trim 'em,"—and quicker than you can think, off goes the heads of some of your proudest model trees; fortunate indeed are you if in years of subsequent caretaking you can replace them, for it was done equally regardless of time or season and probable results. All things considered, probably more harm results from pruning than from the want of it, in the pear (and the cherry also). Nature has kindly provided these trees with habits of growth requiring little aid from art in furnishing such styles of use and beauty as leave nothing to be desired either in the utilitarian or the ornamental view. Therefore what the orchardist has to do is, to stand guard over them with a two-edged sword to prevent all undue cutting and marring. And if luckily he could use it to strike off the head of an occasional "tree-slasher" he would earn the thanks of us all. A painful sight to me was that I recently witnessed in visiting an orchard containing 3,500 pear trees, which had, by instruction of the nurseryman who sold the owner the trees, their entire tops cut off when planted; leaving not a twig, shoot or leader. The idea of pruning everything alike,—peach, pear, plum, cherry, apple, quince, etc., down to a bare stump, is very erroneous; yet this practice is quite common.

Now to begin with the pear orchard at planting I would recommend but slight heading back, if any, providing the trees have been well grown and are of the proper strong and stocky habit,—for what we want to produce the first year is foliage as liberally as possible in order to force the corresponding profusion of rootlets and new system of fibrous roots in the shortest possible time.

I am aware of all this being in conflict with old foggy instructors. But let us compare the two widely contrasting methods, as applicable to pear trees. It is evident that by no possible means can as great an amount of foliage and rootlets be obtained so quickly and set to their reciprocal tasks for pushing forward the newly-set pear tree, if deprived of its entire head and all or nearly all its leaf buds as it could if the leaf buds were remaining plentifully to incite and invite the circulation of sap and encourage the new roots. I am not merely speaking theoretically, but have demonstrated it practically and plainly to the sight and comprehension of any who choose to look.

My neighbor and myself planted orchards of about 4,000 pear trees apiece. He cut all his trees back to a bare stub, while mine were cut back scarcely any at all. We encountered a severe drouth the first season, at the close of which 400 of my trees were found to be carrying more foliage than 4,000 of his, and roots proportionately; his died the worst, though nursed far the most through the drouth. I only refer to the above facts as a practical hint or lesson.

Heading back should be done, if at all, the second year, when formally and finally forming the head, and the subsequent shortening in done by summer pinching. Rub and pluck out superfluous buds and shoots as they appear, and little further pruning is required.

If too rank a growth is shown by certain trees and varieties, at the expense of pears and fruit-buds, bend the branches downwards before midsummer, and hold them in pendant form by weighting them or tying, or any appliance you please. This proves a sovereign remedy, far preferable to root pruning, which I do abominate equal with blood letting. In no soil that is fit for pear orchards will this root pruning and "lifting" operation be necessary. Let us grow pears in soils and locations where neither diseased wood nor too gross feeding roots are produced, and we will not have to resort to root pruning or other heroic treatment. Doubtless such soils and locations abound in the Fruit Belt of Western Michigan, where may be found orchards containing thousands of pear trees wholly free from blight or any disease, no decaying branches and diseased wood are seen, and severe pruning and the new-fangled "lifting processes," with their supporting theories, would be deemed alike absurd and hurtful, as applied to localities favorable to pear growing.

For places where these barbarisms would be required our suggestion is to let standard pears alone, not even attempting them; fall back upon dwarfs in the garden if they must grow the pear at all. In treating of pears, I have spoken of standards only, having little satisfactory experience to tell you of, in dwarf pears. Any advice on treatment of dwarfs I leave to others. In my last-planted pear orchard I set not a single dwarf, but over 4,500 standard pears. Cut sparingly is my theory for pruning in the pear orchard, but if you must cut, do it mainly in the fall or else defer it till about July 1st, always bearing in mind that the pear should be handled with all due gentleness and true tenderness, not being adapted to roughing it—this heaven sent child of the orchard! this angel spirit of the fruits! Why force this beautiful grower to take on the arbitrary form of each planter's or author's capricious fancy, when it is already endowed with every natural line and trait of symmetry requisite to the critical eye of taste and culture?

But with those of the opposite theory and practice it would seem they cut and prune for everything, and for directly opposite reasons and purposes. If the trees show too much strength and vigor, they cut, cramp and shorten the towering forms that proudly are reaching toward the goodly proportions designed for them as His monumental pillars of wisdom, strength and beauty, combined by the Great Architect of our ancient orchard temple. Are we working under a new *regime* that these, our goodly columns, so easily crumble in premature weakness and decay? Shall we not examine into the causes? I said they prune for opposite effects, and root prune the tree or "lift" to hurry into early bearing or to change from natural forms. Or if it has been over-productive and temporarily lost its vigor, gone to a needful rest from its labor to recreation—is lying by for recuperation—this dormancy must be rudely broken in upon, the tree must be cut down to an eye or bud to force a dormant eye to shoot, as it must be strong enough to push one shoot to a rapid growth.

Nothing less can be tolerated. I claim we need not resort to these questionable measures whenever the tree looks too short or stubby or too rank and climbing to suit an exacting eye the passing moment, but learn to wait, watch and nourish; give a chance for accomplishing their centenarian destiny, instead of hastening them prematurely to the close of a brief career,—sickly and precarious. Do we not often see a tree—even whole orchards—dwarfed of habit, crippled of strength, shortened of life and productiveness, weakened of resource and energies by injudicious pruning. The great sample pear trees found here and there in Michigan, Ohio, Indiana, Illinois and Kentucky, yielding 70 to 140 bushels and upwards to the single crop per tree—authenticated facts—are instances of nature taking her own course in the formation and growth of trees—provided always, of course, right soils and sustenance.

We would say, therefore, let up a bit on dame nature; let her have her head; give her a chance to show what she can do for us in the pear orchard. Why cut and carve continually when we are but bunglers at best? We justly fear the pear tree blight; but at the first appearance of a black spot in bark—harmless, or readily cured by slitting—or a twig bored, burned, or blighted, we fall to cutting. And in the case of varieties of the towering habit, it is doubtless quicker and easier to cut and shorten down at one blow than to bend and tie, to pendant form as we recommend; but the latter we deem far preferable, putting the branches as it does in the best shape for encouraging and sustaining the desired productions. This is the utmost we can advise in this direction.

It is undeniable, that a greater amount and proportion of failure and disappointment have been suffered in attempts, at pear culture, than any other branch of pomology in the United States. Yet with a better method of pruning, a wise choice as to climate and correct location and selection, we may hope the Rubicon is crossed. At least the only exceptions we have yet seen in this country from a lamentable degree of failure in efforts to any considerable extent in this line and in these days, are in cases managed as we have indicated above, though details are difficult to give. But the principle is, holding back—trying like the good homœopathist, to do no harm. Careful watching and patient waiting is the password; rub or break out superfluous buds and shoots, bend branches to forms for production of fruit buds, though not hastening too early bearing for its constitution by pruning or other manipulation. Such are our suggestions and practice. The lessons we have learned from what we have seen and experienced teach us to go slow in pruning the pear, withholding the knife wherever consistent; but if there be diseased wood it should be carefully taken out and burned; but far better, let there be none,—the principle being, prevention is better than cure.

In *cultivation*, I intend stopping the cultivation early in August with sowing the land to rye, cultivating the same in the last time of stirring the soil for the season for plowing under the next spring late. I have thus sown this season a fifty-acre pear orchard, and aim to plow under about June 1st; then plant in potatoes, beans, or such hoed crops as will allow of rye sowing early in August. This I would continue year by year.

The discussion here closed and by special request the society next proceeded to discuss

MUTUAL RELATIONS OF NURSEYMEN AND FRUIT-GROWER.

Mr. G. A. LaFleur, of Allegan, opened by saying: When one attempts to speak to the public upon a question of vital importance to those whom he addresses, and especially when the subject involves so great an interest as this one does, reaching to and effecting for good or ill, so many of our most intelligent citizens, it is but natural to feel an inability to do it with satisfaction to his hearers and credit to himself.

Few subjects connected with pomology involve more pecuniary interest than this one. What I may say upon it is intended to include the propagator as well as the planter and fruit grower; for one fills as important a place and performs as necessary a part to bring about the desired results as the other. And each may or may not fulfill all of the requirements necessary to produce good and satisfactory results. I need not here explain the perplexities and disappointments connected with the nursery interests, for you already know too much about it from personal experience. In all of the commercial and industrial relations of men, no one class, profession or craft, is or can be independent of the other; justice and a common interest require that each should faithfully perform the duties that fall to his lot.

Wherever men associate themselves together in civilized communities, and conduct the common business transactions connected with trade and industry; and where the highest attainments are reached, there we find the greatest amount of confidence reposed in each other. And that confidence is never attained or maintained unless men prove themselves worthy of it, and this comes only from a conscientious discharge of our relations and duties to each other; a failure on the part of one, may bring disaster and ruin upon the others.

Whenever any class of men attempt to build up a business of great magnitude which is to rank high and enter into the commerce of the world, success depends largely upon the correctness of the principles adopted as the basis of operations.

Years ago men commenced to build up a business in this State, which has grown to a great magnitude, and already furnishes employment to a large number of men, women and children: that business, is the growing and marketing of fruit. Whatever of progress has been made and success followed, or failures and losses resulted, may fairly be attributed to the degree of faithfulness with which all parties have carried out their part of the duties connected with it. Now in the nature of things it cannot be expected that each man engaged in this enterprise, can himself control or perform all of the labor necessarily belonging to it. Some one must grow the tree and bring it into condition for the planter or fruit-grower; another man must plant it out, cultivate, and gather the fruit; the common carrier must convey it from the producer to the consumer; the commercial man must deal it out to his customers, the consumer must buy and pay for it. He expects value received for his money, and if all parties connected with it are faithful from the time the tree grew out of the ground, he will not be disappointed. But if somebody has made a mistake or acted dishonestly, or some accident has happened to destroy the proper and natural character of the fruit, then the consumer will be disappointed and defrauded.

Now, we see that there are three parties directly interested in this matter; the nurseryman, the fruit-grower and the consumer; each one is dependent

upon the others and must repose confidence in the others. It may happen that the nurserymen propagate and sell trees which produce inferior or worthless fruit; it may happen that the fruit-growers may pack good apples in the end of the barrel, and very poor and mean fruit in the middle; he may pack worthless apples and mark them anything but what they are. In either case the consumer is cheated out of that which he had reason to expect. These things come about through ignorance, dishonesty or accident, on the part of somebody, and in such cases all parties must suffer more or less. It is evident that the nurseryman and the fruit-grower should be honest, capable and careful, guarding the interest and reputation of himself and others, and faithfully, honestly and intelligently doing his duty to himself and his neighbor. And even then when men are governed by good motives and honest intentions, there will mistakes and failures enough occur to satisfy us that perfection has not been reached by all at least.

As a rule men seldom are gainers by being dishonest; besides others suffer from it. If all the fruit sold in the market was what it ought to be, the consumer could pay a better price for it; the producer would receive more money for the same amount of labor performed; the transportation, commission and wastage would be less; leaving a larger balance for the producer. Then he would be willing, in turn, to pay better prices to the nurserymen for his trees, and all parties would have more money and better credit, and be better satisfied. The nearer the standard of right any one of the factors entering into this business of producing, handling and consuming fruit gets, the nearer will the whole prove to be. To bring this about requires integrity, ability, and constant care on the part of all parties concerned.

There is little use of complaining of what has already been done; we cannot remedy the past; our only hope is in the future. If there is any way by which we can avoid the mistakes of the past, let us at once adopt it and carry it out to the end.

The planter should not expect that the nurseryman who grows good reliable trees, and expends extra time and money in his work; who is ready to correct all mistakes, and make good his contracts, can sell at as low prices as the man who comes along from some other State and puts off upon him such stock as is often sent here without the grower's name, that has been picked up almost anywhere.

Our nurserymen ought to take pride in furnishing trees that will be a credit to them in time; selecting scions and buds from bearing trees, or from stock which came from such; giving the setting of them his personal attention, and labeling every thing correctly. If any nurseryman is doing this, or trying to do it to the best of his ability, and his knowledge of his business is sufficient to warrant a reasonable degree of accuracy, then the planter ought, in justice to the nurseryman and his own interest, to patronize him and pay him a reasonable price for his trees and stock.

It would be useless for all of the nurserymen to set up the claim that they had always acted in good faith and followed the above rules; because the many orchards mixed with seedlings and worthless varieties, would be a standing witness against them. I believe that the majority of nurserymen are as honorable as men in any other business, and know that their success depends upon the correctness of the stock which they send out.

I am satisfied that if the fruit growers and the nurserymen would act together and assist each other, they could improve the fruit which is to be grown here-

after; for I am convinced that the same rule holds good in relation to fruit that is applied to the improvement of grain and vegetables.

Take for instance 50 trees of any given variety of peaches, say Late Crawfords, and we often find one or more trees in the same row with the others of the same variety much larger than the others and this holds good for a term of years; now I believe that by propagating from such trees, we can raise the quality of any variety much higher than it is yet. This is that plan which I have adopted, and I am certain of good results. If any fruit grower has any such trees he ought to notify some nurseryman and request him to propagate from it; this would aid much in bringing about the needed improvement.

The real work before us as nurserymen and fruit growers is to bring our standard to as near perfection as possible. The first point is to know what varieties to plant to produce the best results, both for home use and market. The first step to be taken is, for both the nurseryman and planter to acquaint themselves thoroughly with the character and value of the different varieties of fruit grown in the State, and the varieties which have proved most valuable in the part where he is growing them; we are then prepared to act mutually and understandingly. Having settled this point then, all parties should carry the plan out to the best of their ability.

It seems to me that the nurserymen who attempt to grow stock for the public ought to come together occasionally and talk over this subject, and unite in their efforts to bring about any good results within their power; discard at once all poor or worthless varieties and propagate nothing but desirable sorts which they know to be valuable. If nurserymen grew no worthless varieties of trees there would be none planted in the orchard.

Much of the information necessary to govern us in this matter could be obtained from the many intelligent and observing fruit growers in our own localities and through the State; then let no man be persuaded into planting any other than the varieties which he is satisfied he wants. We should systematize our business and regulate our actions as well as our ideas; all this will require time, labor, and care, on the part of the nurserymen, and whether they are rewarded pecuniarily, or not, by public patronage and fair prices, there is one thing certain, they will have the consciousness of having aided in a good work. The vines, plants, ornamental shrubs, and fruit trees grown throughout the country, with their berries, their fruit, and beauty, will in years after stand as so many living witnesses to the part which they have taken in adding value, beauty, and comfort to so many homes in our State.

When we look upon the lawn or yard ornamented by our labor, the vines laden with grapes, and the fruit trees with their roots permeating the earth, their branches reaching out and growing stronger each year laden with fruit, somehow it seems to connect us with the past and the future to something tangible, something real, something that will remain after we have ceased to be; monuments to remind others that we have lived and labored, and left something here that will silently point to the fact that we have once lived and mingled with others in the business and pleasures of life.

The views of Mr. Edgar M. Potter, of Kalamazoo, were expressed in an essay as follows:

I like that word *mutual*. It expresses in three syllables the true friendly feeling of reciprocity which should exist between all mankind. It should enter largely into the warp and woof of this whole life. It is the silken cord

which keeps in closest sympathy and harmony the family, the church and State.

It is the motive power which prompts the commerce of the world and the golden chain which binds together all beneficial compacts and organizations everywhere. It has brought us here on this occasion from our several homes, and when we go back to our own firesides may we feel that this bond is all the stronger for our having met once more.

There is a sense in which all human beings are more or less dependent upon each other, and when we hear a man say he "asks no odds of anybody" we have only to remind him that he is under the greatest obligations for the commonest necessities of life. Not only to "Him who keeps us day by day" but to the humble laborer, to the care-worn producer, to the ingenious artisan and also to the commercial trader who anticipating our wants, gives us that which will help to sustain life and make us comfortable in exchange for that which we do not so much need, and the sooner we recognize the fact that we are thus dependent upon each other, the more fully shall we be able to accomplish the duties of life, sustain its burdens, and enjoy its benefits. There are some occupations that are peculiarly allied to each other, and in fact one cannot well exist without the other; and especially is this true of the "nurseryman and fruit-grower." If there were no young trees, vines or plants propagated, there could be no bearing orchards, vineyards, small fruit or flower gardens. If there were no demand for the luscious fruit so beautiful to the eye, so grateful to the taste, and so conducive to the health, or for the "thousand flowers" with their sweetest perfume and charming tints, no trees, vines or plants would be wanted. But so long as the demand for these products far exceeds the supply we apprehend that there is no limit to a well-conducted business in either of these occupations. But some are ready to say "let the orchardist raise his own trees and plants and then he will know what he has got." Not always!

I have only to call to mind that a few years ago as I was in market with a choice load of Smock peaches, a quite extensive peach-grower came along and remarked that "they were very fine Late Crawfords," and I presume that if I had been inexperienced and just starting a nursery and had gone to that man's orchard for some "Late Crawford" buds, I might have got "Smoeks."

Now, what I wish to say is this: That I am confident that the observing and careful fruit-grower who has his business well and thoroughly systematized can be of great service to the nurseryman in giving him information as to what sorts do best, and the most probable demand; and I think, perchance, the nurseryman may be of some help to the new planter, even in the selection of varieties. It has come to be a pretty well settled fact that where parties in any branch of business will give their undivided attention to specialties the more perfectly will they develop their productions and the greater will be their profits; and he who embarks in any enterprise and allows any outside speculation to divert his mind or his means will in the end be a loser. Therefore, I say, that while nurserymen and fruit-growers are mutually dependent upon each other, their occupations are quite different, and they can serve each other and themselves much better by each looking well after his own specialty.

With some exceptions, the nurseryman can propagate one variety as well as another, but the great difficulty is in anticipating the demand. For instance, if one sort does remarkably well this season, and we propagate extensively of it in anticipation of a probable want, perhaps by the time the trees are ready for

removal to the orchard the call for that variety has greatly diminished. Now, what we wish to know is: What sorts do best for a series of years? I am inclined to think that the very prevalent desire for many varieties, or to be called an "amateur fruit-grower," has done much to disparage the efforts of the honest propagator. The nurseryman gets an order for fifty trees, perhaps two of a sort, but more likely thirty or forty varieties; he trots all over the plantation with spade in hand to faithfully serve his customer, well-knowing all the while that only four or five of these varieties will ever succeed, and when they do come to bear, the orchardist blames the nurseryman for sending him such a worthless lot, whereas, if the nurseryman had filled the order with a few good, reliable sorts very likely the customer would have rejected the whole bill because they were not such as ordered. Of what advantage is an exquisitely flavored fruit, if one cannot get a well-developed specimen oftener than once in ten years and probably never? It is astonishing how many homes, with plenty of unoccupied land, except by noxious weeds, are entirely destitute of a succession of fruits, and many more would be so if it were not for the opportunity of the polite tree agent and the direct interest which the nurseryman manifests in urging a supply.

"Amateur fruit-growers" essentially belongs to a class of "*public benefactors*" who are willing to wear their life out in getting information for the benefit of the community at large, and contented with plenty of "hard work and small pay" that they may "end up" with a kind of self-immolation at the "shrine of Pomona." To the careful, observing ones who will give us the results of their experience, mistakes as well as successes, nurserymen and fruit-growers are greatly indebted and ever shall be.

The advantages which accrue to nurserymen in their intercourse with fruit-growers from different localities enable them to give the new planter much valuable and reliable information concerning the best and most profitable varieties, and usually they can make a better selection for him than he can do for himself. We cannot condemn too strongly the practice among some unprincipled "tree dealers" of mislabelling varieties to suit the demands of the customer who otherwise would reject the order, and we trust the day is not far distant when it will be a penal offense to knowingly mislabel a tree.

Fruit-growers in general should plant chiefly of the well-known market and tried varieties. They should touch new and high-priced sorts lightly. "Better wait a little and see." Because Mr. Somebody has a new and wonderful variety, even though it be well endorsed by popular and reliable men in certain localities, it is no sure indication that it will do well everywhere. It is indeed surprising how people will "grab" after novelties at high prices, and men whom the good Lord has endowed with an average amount of common sense will so often fail to exercise it in the purchase of nursery-stock, and this too, is especially discouraging to the honest propagator.

A few years ago, in the month of September I think, a stranger came up to our place and inquired if we had the "Ohio Ever-bearing Raspberry?" I said no! but that we had the Catawissa, which often bore a second crop in autumn, and had fruit on then. After seeing them, he paid me a dollar for one dozen plants, but neglected to tell me what he was going to do with them. A few days after, a gentleman who was fitting up a nice house in town was up at our grounds and saw the Catawissa and inquired about them, the name, price, etc. "Well," said he, "the other day I paid a red-headed man from Ohio five dollars for twelve of those plants, and he called them the 'Ohio

Ever-bearing Raspberry.' ” “Yes,” said I, “he got them here for one dollar, and you could have had them for the same.” Now, if this same dealer had gone to my friend and offered to have sold him a pair of imported chickens, warranted to lay three large eggs every day except Sunday, and then six, my friend would have “got mad in a minute.” People will buy what purports to be “Seedless Grapes” at five dollars a vine and refuse the Concord and Delaware at ten cents. Yes! and if a good honest looking man, with most eloquent words of entreaty should try to sell them a new breed of pigs called “Boneless Beauty,” with no ribs, back-bone no larger than a fence-wire, ears and snout all “bred off,” in fact every pound “clear pork,” think you they would buy? No, indeed! But if a good, smooth talker should offer them a *new peach*, a “*winter peach*,” one which would keep perfectly until Christmas, *fruit extremely large, beautiful, high flavor*, and all that, and what is more wonderful, it has no pit, but when cut open there would be the cream and sugar just in the right proportion, he would smack his lips and ask the price. “Only three dollars each; six for fifteen dollars; would not sell over six to any one man, as all must have a chance and the stock on hand is limited.” He would think, “Well, I can sell peaches about the holidays at a marvelous price,” and down goes his order for half a dozen and sorry because he cannot buy more. A few days ago a Hollander came to me and asked the price of the early and late Crawford peach trees. I named a very reasonable price. “Too much! too much!” was his reply.

You know the Hollanders are proverbial for taking good care of their money. Well, before he left he told me that he had just paid a stranger from Ohio or New York eleven dollars for seventeen peach trees, but could not tell me the name or good qualities of even one of the wonderful varieties. Canvassers say that they “have got to offer something *new* and a *high price attached* in order to sell.” For instance, the Poplar peach at one dollar per tree, California grapes at five dollars a vine, and Japanese Persimmons at two dollars each.

Let us ever remember that our mutual interests are co-equal with our individual interests, not exactly identical but rather reciprocal, and as we exchange our views and the results of our experience and observation from time to time may we truly feel that no personal advantage shall ever stand in the way of our whole duty to each other.

Mr. Stearns remarked that he agreed substantially with Mr. La Fleur, that the interests of the nurseryman and fruit-grower are identical and there should be no jealousies growing up between them. He knew that there were unprincipled nurserymen and offending fruit-growers, but every flock must have its black sheep.

Mr. A. G. Gulley.—I do not count the interests of the two classes identical except they are both after money. The nurseryman will key the tone of his business to “Will it pay” every time, if he is a good sharp man. He will raise the stock that pays him the best. If fruit-growers call for straight trees the tree-grower will grow him straight varieties. If they insist on having straight greening trees and the nurseymen has the power of substitution he will put in varieties that grow straight and are as closely allied to the greening in fruit as possible. The planters will have to be educated by this society a long time before they can work in harmony with the best judgment of our best horticulturists, which generally includes the nurserymen.

Mr. Sailor.—I differ somewhat from the gentleman. I am satisfied people

are getting generally to appreciate the difference in trees, and the nurserymen are all too willing to make the substitution of straight nice growing sorts for the varieties that do not look so well, and that too, regardless of the quality of varieties. Nurserymen cannot be too careful in these matters, and they as leading horticulturists, should take it upon them to lead public opinion in these matters.

E. H. Reynolds, Monroe.—We cannot be too careful, it is true, but when it comes to educating the people, we cannot do it to the sacrifice of our financial interests. We cannot afford to become bankrupt in our business for the sake of teaching the planter a few lessons in horticulture; we must make our business pay. Nurserymen, I am satisfied, are usually as careful in the details of their business as fruit growers, but when the fruit grower demands that we shall raise Red Canada trees for the same price as Wageners they show their unwillingness to support a legitimate trade. They grumble because some of the best varieties of trees are not stocky at same age as other trees; and when this becomes a regular thing you can see the temptation to make the planter feel good at the outset. But I believe that the majority of nurserymen when they make substitutions, have an eye out always to place in such varieties as will please the planter when they come to bear. I agree with Mr. Gulley, that the planters as they exhibit their object in their expressions, do not seem to have an interest identical with the nurserymen.

Mr. Buell.—Fruit growers, it seems, belong to that very large class of people who delight to be humbugged; and unfortunately the nurserymen have found it out. As to the growing of Red Canadas, they should never be grown in the nursery row; the planter should purchase of the nurseryman good stocks, and plant them out in place, and while growing there they should be grafted to Red Canada. By this method nothing so arduous will be required of the nurserymen as to induce them to strain their consciences beyond the accustomed tension.

Mr. Cackler, of Trowbridge, thought Mr. Lyon's fruit catalogue was having a powerful influence toward increasing the planting of the best sorts.

Several others concurred in this and advocated the planting of fewer kinds.

Evening Session.

Mr. E. Buell, chairman of the fruit committee, submitted a report on the fruit on exhibition. The number of plates of apples was about 100, and there were one plate each of pears and grapes. H. Dewey, of Allegan, ornamented the tables with exquisite bouquets of cut flowers. The persons exhibiting apples were H. C. Sherwood (who also showed the Lawrence pear), J. T. Ratcliff, H. Ray, W. B. Andruss (eighteen varieties), Allen Wood, W. K. Emmons (15), S. M. Pearsall, M. J. Dale, G. H. LaFleur (24), Wm. Rowe, and W. N. Cook. Nearly all the good winter varieties were included. The grapes were of the Prentiss variety and were sent for exhibition by T. S. Hubbard, of Fredonia, N. Y. The committee said: "They are in fine condition notwithstanding the distance they have traveled and the lateness of the season. They give evidence of superior flavor and of excellent keeping qualities. They are of a clear, greenish-white color, and should the vines prove satisfactory, we may anticipate that they will fill the demand, so long unsupplied, for a good and profitable white grape."

The committee in general remarks upon the apple exhibit said: "We are

very much gratified to find upon the tables so fine a display of winter fruits; it is unexpected considering the unfortunate season for keeping apples. At the same time we regret exceedingly to find so many specimens containing worms, or a record of their transactions."

CULTURE OF THE QUINCE

was next taken up, and Mr. Sherwood said he set 100 trees in 1873 and all were now alive. He put half on high ground and half on low land. The former were most successful. The latter he took up last spring and set on higher ground and they afterwards grew well. The soil of the successful trees was a deep, rich, clay loam. He used salt to some extent about the trees; had noticed a sort of twig blight, but it had not been a serious detriment to growth.

Mr. Merriman at first had lost quince trees by grubs, borers, or blight, but latterly had been quite successful. The borers enter near the roots and work upward and about the trees, and they need constant watching. The quince is profitable, and enough can be grown in Michigan to supply the whole country. He allowed the trees to retain their natural habits of growth, which vary greatly. He and some others thought the blight spoken of to be the result of a twig borer's work. President Lyon was of a contrary opinion. Ray's Mammoth was a sort Mr. Merriman recommended.

W. N. Cook said he had noticed in Monterey township, Allegan county, extra-fine quince trees, and thought it a good region for the cultivation of that fruit.

The topic put in the form of a query,

ARE WE NOT LOWERING THE POMOLOGICAL STANDARD OF MERIT BY TOO OFTEN APPLYING THE MARKET TEST?

was next taken up, and President Lyon in opening the subject remarked:

Up to a comparatively recent period, the process of selection under the test of true pomological merit had been, for a period beyond which "the memory of man runneth not," applied to the bringing together of collections of varieties of fruits, adapted to satisfy the demands of an educated and discriminating taste; and worthy to appear upon the tables of those who grow fruit for the love of it; with such care only for the mere profitableness of the varieties, as should render the producing of the needed supply reasonably certain—the question of mere profitableness being a secondary one; and the object being, to provide the farmer and fruit-lover with an abundance of fruit adapted to dessert uses, with a surplus for culinary purposes as well.

This process of continued selection had sufficed to accumulate an immense list of varieties, of more or less local value, from which very few localities would find difficulty in choosing, for the supply of their wants, whether for the table or the kitchen, while the high quality of many of them seldom failed to so attract the palate that our people were coming to be more and more a nation of fruit-lovers, much, as we fancy, to their benefit, so far as mere health is considered, to say nothing of increased economy of living.

Gradually, however, with the growth of our cities and villages, and the development of manufacturers, a demand has arisen for fruit as a market commodity, demanding its subjection to the stress of transportation. To supply this demand, extensive plantations have grown up, of sorts chosen with

only a secondary reference to the quality of the fruit, but with primary reference to securing the best possible pecuniary results from the venture. The planters of these market orchards have not been slow to discover that the mass of their customers are by no means discriminating judges of fruit; that, in fact, they buy mainly *by the eye*. Hence they prefer showy sorts, while excessive delicacy of texture is a serious objection, and, in fact, no superiority of flavor, texture, or even outward beauty can fully compensate for deficiency of size.

With the almost imperceptible growth and development of this market idea, has also grown up a very general practice among farmers, of planting the farm orchard with reference to the growing of a surplus of fruit, to be sold in the market; and, with this idea in mind, even the farmer has shown himself prone to forget the home want, and to merge the whole, to a great extent, in the one market idea. In this they (the farm planters) have, beyond doubt, been, perhaps unintentionally, encouraged by the nurserymen, who have been by no means slow to discover that, as a rule, the more robust and hardy market sorts, are as much more robust in the *tree* as in the *fruit*. In fact, few have probably failed to observe that Red Astrachan, Baldwin, Northern Spy and Wagener, are immensely more vigorous and profitable, as nursery trees, than are American Summer Pearmain, Early Joe, or even the delicate and admirable Pomme Grise.

Such a planter will doubtless succeed in filling his cellars with Baldwins, or perhaps with Pennock, or Ben Davis, but he will hardly care to keep a dish of these, for winter evenings, upon his centre table; and his visitors, as a rule, will honor his judgment in this particular. The result is likely to be—and to a great extent, indeed, already is—that the apple (our staple fruit), is banished to the root cellar, and rarely appears in the family, except in culinary preparations, in common with the products of the kitchen garden.

Under the operation of these influences, there seems really to be great danger that many of the old-time favorites will, in despite of superior excellence, be driven into oblivion; and that, by this malapropos degrading of the standard of quality, such apples as American Summer Pearmain, Early Strawberry, Summer Rose, Garden Royal, Mexico, Pomme Grise, Hubbards-ton Nonsuch and Swaar, will be replaced by sour but strong Red Astrachans or Maiden's Blush, coarse but productive Lowells, tough, dry, worthless Pennocks, Ben Davis and Stark, while we, as pomologists, find ourselves borne backward a half century in our vaunted career of improvement.

State Senator Palmer being present, was called out and made a very neat speech to the effect that he was a beginner in pomology, but greatly interested in it; and while he could not communicate any knowledge, if he could aid by way of encouragement he would bid the members God-speed.

Gen. B. D. Pritchard being called for, said he regretted the absence which had prevented him from attending the other sessions. He had noticed, here in the Allegan markets, the tendency which Mr. Lyon had complained of, and he regretted it. He spoke of the Jonathan and Belmont apples as excellent sorts both for dessert and cooking. He said that a few years ago he could go into the market and find apples in variety, including the very best dessert sorts; and for that reason he had formed the habit of purchasing from time to time the apples that he desired for home use; but recently he had noted that the better quality of fruit had been crowded from the market and it was rare to find just what a man would like to eat among those put on sale.

W. N. Cook.—The fault lies in the people. They should insist on purchasing what is really good, and exhibit a willingness to pay an additional price for a variety—that is more difficult to raise—because it is good. The market will then be supplied.

Mr. Hanford.—The difficulty lies in distinguishing between the market and the family apple. Now I find good sale at remunerative rates for Jonathans and Belmonts. I rather think Mr. Lyon would allow these in his family list. I sell three or four hundred barrels of the latter annually. If by any manner of means the using of the market test is to limit us to such apples as Ben. Davis, I wish to be excused from being either a grower, a dealer or a consumer.

Secretary Garfield read a paper by Mrs. J. D. W. Fisk, of Coldwater, upon

OUR NATIVE FERNS.

[A young lady of Allegan, having seen the topic upon the programme, and evidently having keen appreciation of the fitness of things, placed upon the president's table a plate of fronds from some of our most beautiful wild ferns, which had been gathered during the day on the hillsides of Allegan village. The delicate courtesy thus extended to the author of the essay, rendered the words more effective in entertaining the convention.]

“By placid lakes,
Deep in the forest's leafy shade,
Were plumaged ferns and filmy brakes,
In verdant tracery arrayed.”

The class Filices, to which our native ferns belong, is an exceedingly interesting one, and is also very extensive, embracing as it does, according to Wood, about two thousand species, some of them vying with the lofty palms of the south in height and beauty, and others so fragile and delicate as to be fit only for the wardian case. The fern is a perennial, with subterranean stems from which, on each returning spring, arise the fronds or leaves which, in our common ferns, are green, unless, as is sometimes the case in the early autumn, the frost has touched them enough to bleach, and thus give them a strong resemblance to skeletonized leaves, for which purpose, by the way, they are admirably adapted. It would almost seem that our Creator designed us to make use of these beautiful children of the wood to adorn our homes, so abundant are they and so lavishly has he made use of them in beautifying the face of the earth. There is scarcely a marsh or a pool, no matter how damp or miasmatic, but that its margin is enlivened by the graceful brake: and the rough, unsightly outlines of decayed logs and molding stumps are half hidden by the same symmetry and grace. Why should not we imitate nature and adorn our homes with the graceful ferns? There is very little care or trouble required in their cultivation, for, although they prefer the cool, moist atmosphere and shade, with the rich, damp soil of the forest, they will bear transplanting to the northern and sheltered portions of our grounds. This is particularly the case with the stronger growing kinds that we find upon fallen logs and at the roots of stumps. Vacant corners of the window gardens, if filled with ferns of the various kinds, and the roots unmolested after the fronds disappear, will again gladden us with their wondrous beauty, after their annual rest. In fact, a clump of ferns taken up with care, with a little soil attached, and put down almost anywhere with the roots covered with moss, will thrive when once established.

Where ferns are used for indoor decorations, there is certainly great scope

for artistic display. And for such purposes we greatly prefer them to autumn leaves, for which there has been such a demand for a few years. Although the former lack variety of tints, and the peculiar brilliancy of the latter, they supply that bit of living green that we all so fondly cherish, and that makes home so cheery during those dull, cloudy days of which we have a superabundance in winter.

The labor of preparation is slight, the only precaution is to carry a book in which they should be placed as they are gathered, to prevent curling. A change or two, to dry paper with a small weight, is all that is necessary to insure success. When once dry they are ready for use. They may be arranged upon the walls or upon the curtains, as fancy may dictate.

A cluster of the fronds of that beautiful variety called Maidenhair, placed in one of those vases clear as crystal, and of marvelous beauty, scattered by the centennial, has a charming effect. We have in remembrance a very ordinary room which during the past summer, was rendered simply delightful by the addition of a coral basket, lined with moss and filled with common ferns of the smaller kinds, and hung in the north window. For many weeks the basket was a "thing of beauty," and the remembrance of it will be a "joy forever."

A little girl of our acquaintance, has just completed a very pretty wall ornament. It consists simply of ferns arranged in the form of a wreath upon silver card board, with a cluster of embossed rose buds in the center. It is nothing of itself but when placed in a frame and put upon the wall, it seemed an inspiration.

After all, is it not the presence of these nothings that go to make "home, sweet home," and that gives us the feeling that our home is the dearest spot on earth?

MISCELLANEOUS DISCUSSION.

Inquiry was made as to the grape rot. Mr. Hanford, of Indiana, had lost Ionas, Salems and Rogers' Hybrids, but Delawares were unhurt, and ConCORDS were affected but little, and that only where they were close to the Hybrids. He doubted the possibility of educating the taste of the people up to the use of the best fruits. The Perkins grape, which he pronounced worthless, he could sell for almost as much as the Delawares. Few persons appreciated the very best fruits. The Elvira was a prolific grower, but was extremely liable to rot.

Mr. E. W. Cottrell reported the existence of the rot about Detroit, to a considerable extent, but he had had no opportunity to observe its workings.

President Lyon thought excessive dampness might be the cause.

As a means for increasing the membership of the state society, Mr. Lyman Lilly proposed that the sum of one dollar be made a membership fee for both the state and a local society, the amount to be divided equally between the two. Arguments were made in favor of this, to the effect that aside from the financial aid, the scheme would secure added membership to the state society, and gain a greater interest in its welfare thereby. No action was taken as to the matter.

The committee on resolutions, by Mr. E. W. Cottrell, reported the following, which were unanimously adopted:

WHEREAS, The Michigan State Pomological Society, now just concluding its annual session at Allegan, has received manifold courtesies and favors from societies, corporations and individuals, therefore be it

Resolved, That the thanks of the association be, and are hereby, tendered, (1) to the Allegan County Pomological Society for the gratuitous use of this hall, and for other conveniences and arrangements, through which our session has been made profitable and agreeable. (2) To the reception committee, Messrs. Hilton Dewey, Rev. J. Sailor, L. A. Lilly, Allen Wood and others, for their efficiency and agreeable attentions. (3) To the citizens of Allegan who have so kindly opened the doors of their hospitable homes, and who have entertained us so generously. (4) To the excellent hotels for our entertainment at reduced rates. (5) To the Chicago & West Michigan, Grand Rapids & Indiana and the Grand Haven railroads, for special courtesies and reduction of rates to members. (6) To the press, for their attentive and diligent labors in faithfully reporting our proceedings. (7) To the exhibitors of fruits and flowers, for their excellent display of products at this unfavorable season. (8) To those of our members who have added to the interest of the occasion by essays and contributions of ideas and information. (9) To the officers of our association for their efficiency and diligence, and especially to our devoted and worthy president, and our able, energetic and zealous secretary, for their unremitting labors and untiring efforts, to which the success of this society is so largely indebted.

Upon motion of E. F. Guild a paper prepared by Mr. Geo. Taylor, of Kalamazoo, upon "Hedges," was ordered printed, there not being time for its reading.

The Secretary announced that the winter meeting would be in Hillsdale, and the June meeting in Battle Creek, after which the convention adjourned.

REPORTS OF LOCAL SOCIETIES.

ADRIAN HORTICULTURAL SOCIETY.

OFFICERS FOR 1879.

President—Peter Collar.

Vice President—J. W. Davis.

Secretary—Woodland Owen.

Treasurer—George Allen.

Librarian—Artemus Sigler.

Executive Committee—Benjamin W. Steere, D. Edmiston, C. W. Sheffield, J. Helmes, A. Sigler.

The society has aimed the past year to have monthly meetings, but during the busy summer season they were somewhat neglected. The February meeting was devoted to the question of "keeping apples," and the question was spoken to by several members, but nothing new was presented.

The March meeting was devoted to the best method of keeping grapes. Mr. Sigler presented four varieties, which he had kept in plaster of paris. The varieties were raised under glass, and were Barbarosa, Iona, White Nice and Mrs. Prince's Black Muscat. The fruit presented a fair condition and had retained its flavor perfectly.

The April meeting devoted the evening to the subject of pruning trees and vines.

A request was sent the society by amateur fruit growers of the city, and on the 13th of June a strawberry and flower show was held in the afternoon, at which the following entries were made:

David Ellenwood exhibited 13 varieties of strawberries, to wit: Monarch of the West, Great American, Lenig's White, Kentucky, Crescent Seedling, Seth Boyden, Triumph de Gand, Green Prolific, Metcalf, Chas. Downing, Jucunda, Kramer's Seedling, Col. Cheney.

Mrs. B. Harvey exhibited 7 varieties of strawberries, to wit: Seth Boyden, Monarch of the West, Cumberland Triumph, Black Defiance, Kentucky, Chas. Downing, Duncan.

J. Randall exhibited three varieties of strawberries, as follows: Monarch of the West, Green Prolific, Col. Cheney.

W. S. Rich exhibited two varieties of strawberries, as follows: Kentucky, Green Prolific.

T. J. Ludlow exhibited five varieties of strawberries, as follows: Crescent Seedling, Cumberland Triumph, Col. Cheney, Miner's Great Prolific, Chas. Downing.

Mrs. Wm. Cochrane showed two varieties of strawberries, viz.: Green Prolific, Albany Seedling.

James Jostlin showed two varieties, viz.: Green Prolific, Monarch of the West.

Prof. Lowrie exhibited four varieties, one plate each: Duncan, Dutchess, Pioneer and Sterling.

James Winnis exhibited one plate Chas. Downing.

D. Edmiston exhibited three varieties, as follows: Kentucky, Pres't Wilder, Monarch of the West.

Wm. Wickam exhibited one plate, Monarch of the West.

James Haight exhibited one plate, Monarch of the West.

Flowers entered by D. Edmiston: 28 varieties of Roses; 1 large branch of Roses (climber).

Charles F. Smith (professional), a choice collection of Roses, collection of Pansies, also a collection of Lady Washington Geraniums.

Mrs. L. B. Smith, a beautiful collection of Pansies, artistically arranged.

Mrs. B. Harvey, collection of Roses, cut flowers, collection of Moss Roses, collection of Sweet Williams.

Mrs. B. Hopkins, collection of Roses.

J. W. Helme, collection of cut flowers.

Mrs. A. Sigler, collection of cut flowers.

B. W. Steere, collection of Peonies, collection of very choice cut flowers.

J. W. Davis, professional; collection of Pansies, collection of cut flowers, collection of Geraniums.

Mrs. O. F. Hall, collection cut flowers, collection of Pansies.

Mrs. A. W. Bradish, collection of Pansies.

Dr. W. Owen, collection of Pansies, collection of Roses, collection of cut flowers, collection Geraniums—20 varieties.

Mrs. A. Jones, collection of Pansies, collection of Peonies, collection of Sweet Williams, collection of Roses.

George Allen, collection of Roses.

The exhibition of strawberries was very fine, and a general interest was taken by the citizens in this fruit show, and a very general surprise was expressed at the size and beauty of the fruit and a new interest taken by many to have some growing in their gardens. The roses were in great profusion and of many choice varieties, and with the large quantities of cut flowers tastefully arranged the tables and store looked like one garden of loveliness. The society only expected to show during the afternoon, but the citizens requested its continuance during the evening, which was done, and the room was crowded with visitors until 10 P. M.

On December 10th a very interesting meeting was had, and the subject of "peaches" discussed, at which time Mr. S. W. Dorr, of Washtenaw, being present, gave a very interesting and instructive talk on this fruit and the plan of planting, pruning, and varieties best adapted for that location. He believes that there is no profit in peaches unless raised on high ground, such as may be found occasionally, but does not think they can be relied on in flat, level localities.

WOODLAND OWEN,

Secretary Adrian Horticultural Society.

GRAND RIVER VALLEY HORTICULTURAL SOCIETY.

OFFICERS FOR 1880.

President—Wm. Rowe, Grand Rapids.

Vice President—Charles Alford, Lamont.

Secretary—W. N. Cook, Grand Rapids.

Treasurer—S. L. Fuller, Grand Rapids.

Executive Board—Wm. K. Emmons, Wyoming; Reuben H. Smith, Grand Rapids; A. Sharp, Grand Rapids; S. M. Pearsall, Grand Rapids.

This Society has held its regular monthly meetings on the first Tuesday of each month, which have been fairly attended by its members, always having more or less seasonable fruit on exhibition.

At the March meeting the subject of pear blight was discussed at some length; Mr. Geo. W. Dickinson said that he saved his trees after having been attacked by the disease, by boring into the trunks of the trees with an auger, filling up the hole with flowers of sulphur and plugging up the hole with soft wood. His theory is that the sap takes up the sulphur and carries it throughout its entire circulation, thus driving out the virus.

At the August meeting, Messrs. Wm. Rowe, W. N. Cook, Wm. K. Emmons, and S. M. Pearsall, were appointed a committee to collect fruits and make exhibits at the meeting of the American Pomological Society, to be held at Rochester, New York, on the third week in September; also to make exhibits at the State fair at Detroit, same week; also at Grand Rapids fair of the West Michigan Agricultural and Industrial Society.

This committee sent fifty-four varieties of apples to Rochester, made up mostly of standard winter sorts. Edward Bradfield, of Ada, was sent as delegate from our Society, who made a fine display of grapes, mostly from his own vineyard; for which display of fruits the Society received the award of a Bronze Wilder Medal.

At the State fair the Society exhibited a fine collection of fruits for dessert and family use: also a collection for market: also general collection of apples, peaches, pears, and grapes; also several single plates of apples, peaches, and grapes, entered in name of the grower, with fair success as to premiums.

At the Grand Rapids fair we exhibited a general collection of fruits; a collection of apples; a collection of pears; a collection of peaches, and a collection of grapes.

The Society sent delegates to the annual meeting of the State Pomological Society at Paw Paw; also to the quarterly meetings at Lansing and Muskegon; also to the annual meeting at Allegan, 1879.

Respectfully submitted.

W. N. COOK, *Sec'y.*

LAWTON POMOLOGICAL SOCIETY.

The Lawton Pomological Society was organized in April, 1878, at which time the following officers were elected, and they still continue to hold their respective offices:

President—Hon. N. H. Bitely.

Vice President—Freeman Rice.

Secretary—C. D. Lawton.

Treasurer—A. B. Jones.

Executive Committee—C. Engle, Freeman Rice, H. P. Waters, E. Warner, A. B. Jones.

The regular meetings of the society occur in the 1st Monday of each month; but during the past summer, until the close of the fruit season, meetings were held once each week.

There are about 40 members, all of them, wholly or partially, engaged in growing fruit. The meetings are generally well attended, and the interest, especially during the fruit season, well kept up.

The object of the society is the successful production of all fruits adapted to this locality. And the fruit which has proved the most profitable, and which is regarded with the most anxiety, and upon which hope of future profits are principally based, is the peach; next in order is the grape. The results of the past season's operations were such as to stimulate the setting out of additional plantations of fruit and to cause owners to contemplate the enlarging of the areas of orchards now affording very flattering profits.

At the meetings which have been held in the past year many important fruit topics have been discussed with interest and profit—as a consequence many members who knew very little about fruit raising have become quite well posted in this department of agriculture. Not only have the members acquired information and skill, but the influence of the society has extended to the entire community and so nearly everyone, whatever his business, knows a good deal about fruit matter; far more information relating to this important interest prevails in this community than could otherwise be the case except for the influence of this society. A valuable auxiliary, in this connection, is found in the Reports of the State Pomological Society.

Secretary Garfield has kindly furnished to us sufficient numbers of copies so that nearly all of our members have been provided with one, and they read and appreciate them highly.

In every avocation in life the influence of the higher upon the lower is most salutary, and the value and success of local horticultural societies will always, in a great measure, be commensurate with the influence of the State Society and the estimation in which it is held.

I append an account of our March meeting as a sample of the manner in which we proceed.

C. D. LAWTON,
Sec'y Lawton Pomological Society.

President Bitely made a lengthy report of the proceedings of the Lansing

meeting of the State Pomological Society. He also expressed confidence that the bill for the suppression of the yellows, which was recommended by the State Society, would be enacted, and that it would be well for the members to be ready to enforce it, and to educate their neighbors up to a full realization of the necessity of the law, and of the importance of carrying out its provisions. We have proved that the peach is the most profitable fruit which we can raise, and it is upon it that we chiefly rely for remuneration for our outlay in money, time, and labor, which the planting and care of these orchards have necessarily occasioned.

Judge Lawton related that he learned at the State Society's meeting of a simple method to employ to prevent the inoculating of healthy trees with disease in the process of pruning: which consists in preparing a small jar of carbolic acid and affixing to the jar a wire bale, or some other arrangement for convenience of carrying, and this the pruner takes with him in the orchard and dips the blade of his knife or shears into the liquid, after having finished the pruning of a tree and before commencing to prune another. This seems to be a very simple arrangement, and safe one, and as some precaution is imperatively necessary, this method is, apparently, worthy of adoption.

FUNGOID GROWTH.

Judge Lawton also dwelt at some length upon fungoid growths, adverting to the fact that the yellows doubtless belongs to this class, since it is a contagious disease; therefore there must be spores by means of which the contagion is spread—unless the disease be of animal origin and infinitesimal animal life is germinated in the sap of the tree. As among insects and the lower order of animal life, one fungus preys upon another, and to this fact we may possibly look, somewhat hopefully, for assistance in our perplexities—at any rate, many of the most destructive fungoid diseases disappear; instance the potato rot, which is one that comes and goes, causing in Ireland, at one time, a famine and then vanishing. The apple tree blight, which a few years ago spread all over the country with alarming effect, seriously threatening the, at least, partial destruction of our apple orchards, has disappeared. The black knot, which many years ago destroyed the plum trees and cherry trees, is seldom heard of now; and the pear tree blight, which has been extensively prevalent for the few past years, has, according to Mr. Downing, its periods of coming and going.

The peach tree curl-leaf is a fungus and some seasons, doubtless due to climatic conditions, is very prevalent, other years it does not appear at all. It was suggested that the members experiment, the coming season, with the use of carbolic acid, sulphur, lime, ashes, etc., in staying the yellows, pear tree blight, etc. Try introducing carbolic acid into the circulation by boring a small hole into the tree, pointing downwards, and filling it with the liquid; one member stated that he had used kerosene in that way, without any ill effect, and he thinks with benefit. Prof. Tracy, it was said, had cut off the blighted limbs of a pear tree and had applied carbolic acid to the body of the tree where the excision was made, with apparent benefit; there was no further blighting, and the pear tree flourished.

SULPHUR.

Mr. H. Waters said that two years ago he dug about the roots of 300 peach trees, and applied a mixture of sulphur, salt, and ashes, and last year, while

peach trees near by this plat were attacked with the yellows, none of the trees which he had treated with the mixture showed any signs of the disease, but whether this had any effect as a preventive he makes no conjectures, a longer experience being necessary before venturing an hypothesis; thinks by persistent and careful attention the society may be able to determine some valuable facts.

Mr. Birdsell inquired what peach trees it is best to set for profit, assuming a succession to be desirable.

Mr. C. Engle stated that the Hale's Early had proved profitable here. The Amsden and Alexander promise well; the Early Beatrice has been largely planted, but thinks it too small; years ago the Early Crawford was the most profitable peach he raised, but of late years there has occurred a glut in the market just in the season of its ripening, which has caused it to sell low. He finds the very early and late varieties pay the best. The Mountain Rose is a splendid peach, bears well, but don't handle well. The Snow's Orange comes just after the Early Crawford, will bear good cultivation and stands first.

Jacques' Rareripe is an old and reliable variety, safe to eat, as are also Old Mixon, Stump-the-World and Hill's Chili. Mr. Engle said he believed he got the last from the original tree, and finds that upon very rich ground and with good cultivation it is a very profitable kind. The land can hardly be too rich; his brother in Cass county, upon very rich soil, raises them and produces finer fruit than he has ever been able to obtain in his orchard, though he has given his trees of this variety special attention. He made more money out of the Late Crawford than from any other sort.

SALES.

Mr. Engle submitted the following statement of his sales for 1878, showing the number of boxes of each variety sold in the Chicago market, and the price received per box: 3,000 boxes Early Crawford sold, amount received per box, 63 cents; 200 Hale's Early, 85 cents; 300 Early Barnard, 67 cents; 600 Late Crawford, 85 cents; 800 Hill's Chili, 75 cents; 70 Old Mixon, 70 cents; 50 Smock's Late, 89 cents.

Mr. Bitely said he has a plat of Stump-the-World that have been set ten years on a light sandy knoll and the trees bear heavily and the fruit ripens gradually, so that he is enabled to pick over the orchard several times—he took the first premium on this variety at the last State fair. Mr. L. L. Halstead would plant Hale's Early, Early Crawford, Hill's Chili, Late Crawford and Smock. He realized the most profit from Hill's Chili, though the Late Crawford brought the largest price, some of them \$4 per bushel in the orchard, but there were too few peaches upon the trees. He finds his cling-stones always sell well, not less than \$2 per bushel. Would set pretty freely of them.

SEEDLINGS.

The list as suggested by Mr. Engle was discussed fully by the members and generally agreed to. Judge Lawton stated that it seemed desirable that those varieties which produced the same kind, of equal excellence, from the pit, should be known and that method employed in increasing our orchards, since by this means we may lessen the danger of the spread of the Yellows. Seedling trees are generally supposed to be hardier. Hill's Chili, Early Barnard, are always true from the pit, and in fact most of the common varieties, except the Crawfords, are also. Mr. Waters stated that Mr. Engle has originated a

peach which he calls the Yellow Honest John which he regards as a great acquisition, he has set largely of them; the season is first after the Early Crawford; tree vigorous and productive; fruit large, yellow and attractive in appearance and bears handling well.

Mr. J. C. Gould has also originated a peach which is very large, yellow and altogether a promising variety.

Mr. Engle stated that people sometimes get mistaken notions in regard to the exemption of varieties from the effects of the frost. The Crawfords are as sure as any. Some years ago the fruit buds of his Crawfords were all killed and his Barnards came through all right; he thought he would henceforth discard Crawford and set Barnards, but a subsequent experience turned the tables. In the following year the fruit buds of the Barnards were destroyed and the Crawfords bore finely, so he concluded that one "can't most always tell."

COLDWATER HORTICULTURAL CLUB.

OFFICERS.

President—Geo. W. Fisk.
Vice President—E. J. Moss.
Secretary—J. D. W. Fisk.
Treasurer—Mrs. M. Atyeo.

[The only record of the transactions of this society which I have is the following newspaper report sent me by Secretary Fisk.—SECRETARY.]

The annual meeting of the Coldwater Horticultural Club was held Friday, Jan. 10th, at the house of G. W. Fisk, in Coldwater township. After the usual opening exercises the annual reports of Secretary and Treasurer were called for. The financial report was as follows :

Whole amount passed into the treasury during the year.....	\$7 50
Paid out for printing.....	50
Freight on box of State reports.....	40
Expenses of Secretary to meeting of State Society at Jackson.....	3 25

Leaving a balance in the treasury of..... \$3 35

The following is the Secretary's report :

The number of meetings held during the year is six, which were at the following places: J. R. Wilcox, H. S. Hill, J. H. D. Warren, J. D. W. Fisk, Harvey Haynes and Hiram Horton. Some of the meetings the latter part of the year were omitted because of the inability of the Secretary to give the matter attention.

The subjects discussed at these meetings may be classed under two general heads, to wit: The Garden, and Small Fruits. The garden was divided into a number of topics, each of which was carefully opened up by some member and thoroughly discussed by the Club. The garden topics were as follows: "The Growing of Roots for the Table and for Stock;" "The Culture and Preservation of Cabbage;" "How to Grow Asparagus, Melons and Cucumbers, Tomatoes, Cauliflower and Lettuce."

Under the head of small fruits nearly all kinds, except grapes, have been quite thoroughly discussed.

The following papers have been prepared and read before the Club during the year: Mr. E. J. Moss, On the Garden and its Associations; Mrs. Geo. W. Fisk, The Root; Mrs. H. Horton, Cooking Vegetables; Mrs. J. D. W. Fisk, Salads; J. D. W. Fisk, The Tuber and the Bulb; Mrs. E. J. Moss, The Construction and Management of Hot-beds; Mrs. H. S. Hill, Color and Fragrance; Mrs. A. H. Legg, Preserving Small Fruits; Mrs. Filkins, Preserving Tomatoes; Miss H. E. Moss, Utility of Flowers; Mr. Isaac Grundy, The Propagation of Fruit Trees; a beautiful poem by Mrs. Dr. Newberry, "Origin of the Strawberry;" and lastly, the report of the Secretary of the proceedings of the meeting of the State Pomological Society and discussions thereon.

The following persons have joined the Club during the past year: Mr and Mrs. Herman Horton, Mr. and Mrs. H. S. Hill, Mr. and Mrs. John M. Gray,

Mr. and Mrs. E. J. Moss, Mr. J. E. Moss and daughter, Mrs. S. E. Lord, Mr. and Mrs. Jeremiah Cox, Mr. and Mrs. Mahlon Smith.

After finishing his report the Secretary said that although the number of the meetings had been somewhat abridged it was evident a large amount of work had been done by the Club the past year and a high degree of interest maintained at the meetings. He presumed every member had felt the Club exercises very profitable. Something of a reputation had been acquired by the Club even abroad, which was all owing to the unusual amount of study and investigation they were giving to horticulture practically and scientifically. Only a few days since he received a letter from another county inquiring respecting our organization. The Secretary would like to know the feeling of the Club respecting future work; whether they were prepared to give the same attention and study they had in the past. If not, we might as well quit right here; societies are of no use only through work done by the members. But if we are anxious to continue the study of horticulture and the sciences appertaining thereto, and are prepared to give the time and energy necessary, the work of the Club will continue to be of equal interest and profit. The field for labor is almost exhaustless. He would like very much to take up the study of Entomology in connection with Horticultural topics. He wished an expression from the members.

Mr. Geo. W. Fisk said he did not want to quit; was prepared to do as much in the future as in the past.

The President said he had not done very much work but had greatly enjoyed the meetings and wanted them continued; would make a standing offer to entertain the June meeting at his house every year.

Mr. Warner said on account of his age he had not expected to do very much work, but always meant to be on hand, and had been greatly interested and profited. He felt under especial obligation to the ladies for the valuable papers they had contributed. He could not consent that the Club should stop its work. He had been quite disappointed in one thing. He had expected the Club would receive its main support from the city, but the most of those who had joined from the city had dropped out. He did not know as it was much matter, but it showed where the best workers and students of horticultural topics were found.

Mr. Warren could not think of stopping, and was prepared to work on.

Mrs. Horton had been greatly disappointed in the club. She had planted and tended very carefully some pumpkin seeds distributed by Mr. Warner at one of the club meetings, and they brought forth only some little, puny things too small to be called pumpkins. Nevertheless she did not want the club to stop. Perhaps the pumpkins would grow larger next year. She thought we should make calculation to exhibit a club collection at the next county fair. It would add to the fair and do the club good.

As the members all seemed to have a "mind to work" there was no question but that we had better continue our club work.

The following officers were then elected for the ensuing year:

President—Geo. W. Fisk.

Vice President—E. J. Moss.

Secretary—J. D. W. Fisk.

Treasurer—Mrs. M. Atyeo.

Quite an interesting discussion then took place on the "Culture of Grapes," which time and space will not permit me to report. I will simply say that the

discussion was mainly with reference to pruning and training the vines, and that those of the members having experience preferred training to stakes, and that often spring training was better than fall.

The topic selected for the next discussion is "The Culture of Quinces." As the club decided to take up the study of entomology, Mr. E. J. Moss was appointed to prepare the opening paper. One or more papers on other topics may be expected at the next meeting.

By invitation of Mr. Selover the next meeting will be held at his house on Friday evening, February 7th. A cordial invitation is extended to all desiring to attend.

J. D. W. FISK, *Secretary*.

SOUTH HAVEN POMOLOGICAL SOCIETY.

[The only record we have of the proceedings of this Society is a few papers sent by J. G. Ramsdell, secretary of the society, which we append below.—
SECRETARY.]

NEEDS OF THE SOUTH HAVEN POMOLOGICAL SOCIETY.

BY NORMAN PHILLIPS.

First. We need active and efficient officers, who will attend all of the meetings of the Society and take a lively interest in its deliberations and discussions.

Second. We need pleasant and attractive rooms wherein to hold our meetings; the ladies being members of the Society and invited to meet with us and participate in its discussions.

Third. We need one or more good essays on practical Pomology every month.

Fourth. We need a wide-awake monthly publication, and every fact or item valuable for a fruit-grower to know should be published to the world.

Fifth. We need to have every essay read in this Society full of facts, short, and to the point.

Sixth. We need a strawberry fair and festival every year in June; and a show of fruit, flowers, and vegetables in September; premiums or no premiums.

Seventh. We need to put the same energetic and well-directed persevering labor in our business as would be essential to success in any other calling.

Eighth. We need to search diligently for the cause and cure of that dread disease in the peach trees, known as the yellows.

Ninth. We need united action in preventing the spread of the yellows; in the destruction of the curculio and codling moth; in the preservation of all useful birds; in keeping up the fertility of our soils; in honestly putting up every package of fruit; and in patronizing none but responsible houses in selling the same.

Tenth. We need to be content with our calling as fruit-growers, when we take into account our moderate climate, our fertile soil, our location as to market, our healthful position beside this grand old lake, and the intelligence of our people.

Eleventh. We need to remember the lessons we have learned in this Society, and by experience, and in the future strive to make our lives and homes as beautiful as are the works of Nature.

Twelfth. We need to beautify our homes with lawns, trees, and flowers, and make them profitable by surrounding them with orchards, vineyards, and plantations of various kinds of berries; and withal, ornament our streets with trees. For there is in the mind a power or faculty for the appreciation of the beautiful; let us cultivate that faculty, adding grace to beauty, ever moving onward and upward, until we are called to lay down our implements on earth and enter the house not made with hands eternal in the heavens, and receive that welcome plaudit, well done good and faithful servant.

THE YELLOWS IN OUR PEACH ORCHARDS.

BY H. J. EDGEELL.

The yellows in our peach orchards has been the standard theme for disputation in our society for the past several months, scarcely a meeting having occurred during the period mentioned but that this topic in some shape or form has not been interwoven or sandwiched between our regular subjects for discussion.

And so much of fascination has attached to this magic word, that no amount of overwork, or of darkness, and difficult navigation of miry streets, has in this time prevented a general attendance of members whenever the question for consideration promised a reference to this subject.

In all these discussions, however, I regret to say few *new* facts have been brought to the surface, and at the end of the season we find our fund of information respecting this insidious malady has not been materially increased.

This is doubtless, for the most part, attributable to the well established fact that no clearly defined case of yellows has ever been known to succumb to successful medical treatment. Hence the prevailing apathy and the absence of any incentive to study or stay its progress, as also the additional unfortunate circumstance that we collectively ignore that wise and time honored adage that "an ounce of preventive is better than a pound of cure." And this I apprehend is the only direction in which we may seek or hope for substantial relief. We may unitedly *prevent*, but unitedly or otherwise *cure* is improbable if not impossible.

Permit me now to revert to the evening of the conference with our Saugatuck friends, on which occasion it will be remembered I endeavored to submit the result of some of my observations during the latter part of the past season with reference to a somewhat novel, and, as I regard it, more than probable, theory respecting the dissemination of this disease, the disjointed and confused relation of which however was not deemed sufficiently clear to warrant a record thereof. And I should most probably not have taken this method of recurring to them again had not others since so far signified their appreciation of the suggestions they embodied as to adopt some of them as their own, and have recourse to the public prints for their ventilation.

As previously remarked, during the season just passed, while testing the "pruning theory" on diseased trees, as this was at one time advocated by some of the brethren as the correct thing to do, I observed after each operation that contact with the foliage of such trees invariably produced on my hands and face a prickling or tickling sensation, quite annoying, and in mitigation of which soap and water proved the only effectual remedial agent.

Somewhat curious to know its cause an examination of several diseased trees followed and its presence was manifested in each instance. A similar inspection of healthy trees was also had, but without disclosing similar results.

The theory advanced by some Eastern authority that the solution was to be found in the presence of myriads of microscopic insects occurred to me as the most plausible, but careful microscopic examination failed to verify this conclusion. But in lieu thereof the newer growth of foliage on all the infected trees examined was found to have developed a delicate light-colored or silvery lining underneath, which with the slightest friction against the face or neck, produced the effect before noted.

Impulsively concluding that birds, insects, man or beast coming in contact with this delicate substance under favorable conditions of temperature and moisture might thus easily displace and convey it from tree to tree, finding a congenial foothold in some and failing in others, impregnating those near at hand or at distant points as the conditions might prove more or less favorable, I accordingly gathered a handful of these fungus covered leaves moistened with the morning dew, and selecting a vigorous and healthy tree some rods distant, and having previously observed that the disease in most instances presents its first appearance on a central or southeastern branch (probably because birds and insects in the cool dewy morning find these sunny spots most to their liking for the arrangement of their toilet), I proceeded to the selection of a branch on the sunny side, and the handful of infected leaves was gently brought in contact with both surfaces of a number of the moist leaves on the healthy tree. Almost daily visits to this tree followed for the ensuing two weeks, when no change being perceptible, they were discontinued, and in the subsequent hurry of harvesting my grape crop, the experiment was forgotten until some three weeks later. Passing this tree I was surprised to find a portion of the leaves on the vaccinated branch assuming a wilted appearance, and the unmistakable half moon shape which most of our members now recognize as the premonitory symptoms of the presence of the disease.

It only remains to be added that before the tree was finally divested of its foliage by frost, this peculiar crescent form was distinctly apparent in nearly every leaf upon this branch, and the entire tree I have little doubt will next season develop the disease in an advanced stage. I may also note in evidence of my belief that birds and insects may be, and probably are, the unwitting vehicles for spreading broadcast the contagion: that at least four-fifths of the infected trees in my orchard during the past season were *bordering on a ravine* densely overgrown with weeds and brambles, making a favorite resort for both birds and insects. These birds and, possibly also, the insects, may and probably do migrate from infected districts mainly during the night or early dawn, flitting from tree to tree, from orchard to orchard, their limbs and plumage thus becoming the best possible means of displacing and conveying these delicate germs, and anon disseminating them by contact with the foliage of healthy trees elsewhere. Indeed, in no other way can its erratic spread be reasonably accounted for. But besides the numerous birds finding here a congenial basking place in the early morning's sunshine, as also a flattering outlook for the conventional "early worm" during the early summer, three or four and frequently ten times the number of curculio were caught from the row of trees adjacent to this ravine than were found elsewhere in the orchard, the number always diminishing in proportion as the distance increased. This, in connection with the fact before stated, that the larger percentage of the diseased trees to be found in my orchard were in these identical two rows where birds and curculio were always most abundant, is certainly suggestive of a reason for the assumption that birds, insects, and yellows, have, to say the least, some curious coincidental connection.

And now, in conclusion, let me add that this single experiment is not offered as proof positive and infallible, but rather as a suggestion, with the hope and expectation that all interested will make similar tests, and if conducted with due reference to the extreme delicacy of the laws which govern the growth and dissemination of these minute wonders in nature's economy, I have no doubt as to the attainment of like results; and if this theory may be practi-

cally demonstrated, the problem of suppression is no longer a difficult one of solution.

THE FRUIT OF OUR LABORS.

BY JOSEPH LANNIN.

[Read before the "South Haven Pomological Society" January 13, 1879.]

The subject of fruit culture has been so often written upon by gentlemen of greater ability and larger experience than myself, that it seems almost superfluous for me to say anything on the subject. That our magnificent lake exercises a soothing influence upon the cold blasts of the west, and northwest, as they blow this way in their fury, is a fact admitted by all observers. To Lake Michigan we are indebted for the genial climate we are so highly favored with, thereby enabling us to cultivate successfully so many varieties of rich, beautiful fruit.

The cold snap of the 3d inst., which spread itself nearly all over this continent, causing all of the papers of this country and of the Canadas to note its intensity, was scarcely felt in the vicinity of South Haven. According to several thermometers, the lowest point reached was zero, and in one or two cases one and two degrees below, while in Pittsburg, two degrees south of this place, the temperature fell to 21 below zero. In Detroit, the mercury fell to 10 below; Cairo, 9 below; Springfield, 24 below; Geneva Lake, Wisconsin, 27 below; Ann Arbor, Mich., 18 below; Des Moines, Iowa, 29 below; St. Joseph, Missouri, 20 below; St. Louis, 18 below; Richmond, Va., 8 below; Indianapolis, 20 below, and at Janesville, Wis., 30 below.

A stranger seeing these figures might well be startled, and ask the question, Why is South Haven so highly favored? We answer, Lake Michigan stretches its protecting wing over this place. Again, how does Lake Michigan protect you? We answer, Lake Michigan is a great furnace heated by the summer sun, and lies directly between us and the winter's blasts; and as these fierce blasts blow this way, they are "melted into compassion," as Mr. Dyckman on a certain occasion beautifully said "and they spare our fruit trees."

Let me draw your attention to a geographical fact, that all countries lying east from large bodies of water are more adapted to fruit culture than countries adversely situated. I might mention Palestine, Portugal, Italy, Greece and the Ionian Islands, California, Michigan, and several other countries as proof of this position.

With our genial climate, rich soil, good markets, and splendid facilities for transporting fruit to market in a perfect state, it behooves us as fruit-growers to take advantage of our many opportunities by raising only a first-class article of fruit, and by so doing secure a high price for our labor.

With a view to the accomplishment of this purpose, I suggest to my brother fruit growers that you select and plant only the best stock of the best varieties. I would not plant any inferior tree of even the best variety, if it was given me for nothing. We should not in my opinion plant too many varieties. The utility of many orchards is destroyed from want of concentration. Don't plant too deeply, as from the nature of cultivation, you will plow and cultivate more towards the tree than from it. Cultivate your orchard thoroughly—indeed, you cannot do too much in the way of cultivation. The future welfare

of an orchard depends in a great measure upon the cultivation it receives during the first three or four years of its existence.

Prune judiciously. In a short essay of this kind, it can hardly be expected that I can say much on this subject. The orchardist must observe his trees closely, and cut off all superfluous limbs and dead timber, giving the middle or inside of the tree air and sun-light.

If these few simple ideas are carried out, you will without fail, raise such fruit as will command the very highest price the market can afford to pay. You need not be afraid of the cry some raise about over-stocking the market. Who ever knew the market to be overstocked with first class fruit? Why, every one, even the poorest, will purchase good fruit at almost any price, in preference to accepting an inferior article as a gift.

I make bold to say, that perhaps nothing else in the world is so attractive to the sight as beautiful fruit. The goddesses of old contended for a golden apple, and Atalanta stopped in the race to pick one up thrown by Hippomenes. By so doing she lost the race, it is true, but she gained a husband. Here, in South Haven, peaches have been grown large enough and beautiful enough to tempt Venns to reveal her beauty, and Atalanta to stop short in her race for a husband. In Chicago, last season, Michigan peaches sold so high as \$1.50 per basket, while the highest price from any other point did not reach over 95c. for an equal quantity. What has been done year after year by our friends in South Haven, can be done again. We have made our mark. We have gained a name as pomologists. To do so we have had to work diligently, faithfully, perseveringly; and if we mean to hold the proud position we have gained we must not sleep on our post. Don't be discouraged because the yellows has made some ravages in your orchards. Let us fill out the rows, and plant out new orchards. Who knows but the next summer may be more favorable than the last?

A GLANCE IN RETROSPECT.

BY C. J. MONROE.

[Read in January, 1879.]

Before closing our accounts for the past year, it occurs to me that it will be profitable for us to glance at some of the items which time has recorded during the year just closed.

In a general way, it has been a year of great anxiety to our people as a nation; nearly every person has been striving to make both ends meet, and to bridge over the year with the hope that better times were near. This vicinity has been no exception, and many of our people have keenly felt the depressing influences which have surrounded us.

The open winter of a year ago, with its freezing and thawing, followed by an unusual spring, was very severe on our trees and crops, causing a partial failure of our strawberries and other small fruits; and, in the opinion of many, aggravating the yellows, the spread and development of which has caused more alarm to our fruit growers than any other;—nay, I may say all other causes have not had so depressing and discouraging an influence on our fruit interests, although to many of our people there are numerous reasons, including the one above mentioned, which have led to the unusual development of this disease—causes and reasons which are not likely to occur again for

some years. Time, of course, can only decide how well grounded are these hopes, although it is generally conceded that their realization will depend much upon our determination and watchfulness.

But I leave this subject to others, it being more to my purpose to examine some of the items of debt and credit in our past year's doings, and to make comparison of our situation with others.

Our experience teaches us that when we compare our productions or knowledge *with others* we often have occasion to put a more modest estimate on them; also, that it is equally true that we need not go far to find many whose situations are worse than our own.

The yellow fever at the South the past summer is familiar to all. The grasshopper has devastated many portions of the West. Failure of wheat in those sections where it is the staple and principle crop. Hog cholera has destroyed in a few days the results of a year's labor. The destruction of fire and water have come to many of our neighbors, cutting off in a few hours the main dependance of thousands, and many other calamities and drawbacks, which will occur to you in running over the records of the past year.

We have been specially favored in escaping these scourges,—good health has been ours; and general prosperity has been the rule, as evidenced by the liquidation of many old debts, the prompter payment of new ones, and the earlier settlement of taxes; also the fewer applicants for charitable aid from the township.

True, our crop of small fruits was a partial failure, and the apple, peach, pears, plums, etc., lighter than usual, but we were nearly compensated in the better price received.

I think it generally conceded that the partial failure of our peach crop a few years ago was of advantage in giving the trees a chance to recuperate, and in stimulating the more rapid clearing of our lands, and the raising of general farm crops which have made us nearly self-sustaining.

And many regard that the chances are in our favor, that the yellows may prove a blessing in disguise, by narrowing peach raising down to those who are willing to give the time and attention requisite to the production of this fruit; also in the greater variety of fruits which are being raised in our vicinity.

It seems to me there has never been a time when our prospects were brighter; we have tested all sorts of fruit and find they will succeed. I do not know of a case where parties have intelligently made a specialty of any kind of fruit which has not proved a success.

This variety in our fruit culture is of great importance as it insures us against those failures which are apt to come to all kinds of crops or branches of business, or to those localities dependent on our industry.

Our harbor has been much improved the past year, and our railroad reports increase of business, all of which is gratifying, as a good harbor and plenty of business are the surest means of giving us additional transportation facilities.

It is demonstrated that the most profitable fruits require concert of action in the community to ward off disease and guard our trees and fruit from the numerous enemies which seem ever ready to destroy the one and get a liberal share of the other,—and as often stated, eternal vigilance is the price of fruit-raising.

No means are so potent in securing this concert of action as our pomological society. For eight years it has been the rendezvous when any special danger threatened our fruit interest, and I think we can hardly over-estimate its

advantages. May it ever be the rallying point around which we may gather to mutually discuss our difficulties and needs, and to remind us that success comes by care, forethought and patient industry.

As stated on a former occasion, we need these gatherings for mutual encouragement, especially in times like these when so many put on wry faces, and repeat with a variety of changes that it is "hard times;" and in their solitude think their lot peculiarly unfortunate. It is well to have this interchange of knowledge and experience to remind us that each has his ups and downs. We require this social communion of thought that we may learn new ways and means, and catch some of the inspiration of the more hopeful, thus assisting us to appreciate the grand fact that there is more sunshine than cloudy weather, more day than night, more prosperity than adversity. We want to brood less over the book of Lamentations, and study more diligently those encouraging lessons so abundantly found in the good Book of Life, recalling the teaching of the vineyard, and remembering the reward of the thrifty husbandman who improved his spring time in sowing the good seed, his summer in weeding out the tares and cultivating his crops, that the fall might bring forth a plentiful harvest of the fruits of his toil for winter's enjoyment.

Rarely have our trees gone into winter quarters in better condition than the season just ended, and it seems to me that in closing our books we have a liberal balance on the credit side to encourage us to go forward with a determination to increase it the coming year.

Certainly the two weeks of the new year give us promise in this direction. Old Winter has spread a liberal mantle over the earth to keep it warm and give it fertility, besides furnishing protection to our trees. I am reminded here to call attention to the fact that a few weeds, oats, rye or cornstalks in our orchards are all-sufficient to induce the snow to lie quiet where it falls, instead of rushing at the wind's behest, into heaps, greatly to the annoyance of travelers and the detriment of our orchards.

In conclusion, when we shall gather around our festive board, spread with fruits, etc., and recall the extreme cold weather east, west, north and south, during the past few weeks, I trust we shall renew our thanks to Lake Michigan whose genial influences have kept the spirits of our thermometers so far above those depressing points which have probably endangered the fruit crop of our neighbors.

PLANT LIFE.

READ IN JANUARY, 1879, BY MRS. L. MILLINGTON.

It is well that the third period of time assigned to the creation should be given to the production of vegetable life. "Let the earth bring forth grass, the herb yielding seed, and the fruit tree yielding fruit after his kind, whose seed is in itself." That was the command, because until the earth was clothed in vegetation as a garment, not the smallest creature breathing the air in any way, could exist for one moment. The atmosphere was not only a deadly poison, but there was no possibility of an animal, or an insect subsisting without the food furnished by plants. The whole food of all the living beings on the earth to-day comes from plants, and we live in the air purified by their chemical elaborations. In view of this important mission, nature has made the most careful and exact provision for the continuance of all the species from the highest to the lowest. It is not for grandeur or beauty that

the pine tree lifts its majestic head to the sky, but to hold up in the pure air, and ripening sunshine, its clusters of brown cones, with their precious seeds. Wheat is but a grass, whose stalks are girt with lines of delicate crystal flint, that it may have strength to hold up the heavy head filled with the seed in which is garnered the ripe sweetness of the whole plant's growth. The bearded awns and the bristling palea are used to secure it safe lodgment in the earth where it falls. Nature has planned to continue its life without the help of man. If we pull a stalk up by the roots, they wither and die, the leaves fade, and all the sap is concentrated about the embryo, striving even in death to fulfill the one law of its existence, to which all else is made subservient—the continuance of its kind. For there must be seed time and harvest until the end of the world.

Also the tares, and the unprofitable thistles, would seem, by the care taken to continue their race, not so disparagingly estimated by their Creator. That they may be useful or not to us, does not at all affect the elaborate provision for support and continuance which has been made for them.

Sedges, ferns, and mosses, are apparently the most worthless of all nature's children, so far as use is concerned, for scarcely a worm even will touch them, yet they are among the most widely distributed of all our plants. These, with gigantic rushes, are supposed to have formed the vegetation of the coal-making period. To-day they cover much waste, with a never-ceasing chemical elaboration, needed to bring it into condition for man's use. The dry, coarse, common brake, returns in its ashes so large a proportion of potash that it was formerly much used by the poorer classes in Europe for washing, in the place of soap. One delicate little fern I have found here, a pale velvety thing, gives, when burned, one grain of pure potash. The rest is etherealized, and flies away in vapor, or gas. Mosses thrive where no other plants would, and so help to clothe the earth, and furnish food for a higher order of plants. They have the power of going on continuously, growing from their tops until vast numbers of generations are buried beneath the green ponds of this year's production. I have seen a ditch cut through a peat bog without having reached the bottom of the moss. The moss had become a pale brown, but was unchanged otherwise.

Among the apparently insignificant plants which nature has tenderly provided for, is the common wild violet. A plant springs from seed, and does not flower the first year, but produces enormous quantities of perfect seed from subterranean pods, which bear no signs of flowers. The next spring it flowers once, and bears seed from these flowers, and then takes up the subterranean seed-bearing again. The capsules come up out of the ground as soon as they are ready to burst, and so the seed is distributed as usual. It remains to be seen for how many generations those flowerless seeds will go on producing fertile plants. Nature has exact laws for all such cases. The marsh Pennywort, and the Fringed Polygale also produce subterranean or proliferous flowers. Lilies produce axillary bulbs along the stalks, as well as bulbs, every scale of which is in itself a separate root. One of the loose strips produces roots in the axils of its leaves, which become perfect plants as soon as they fall to the ground. A sedge does the same thing. The intelligence of man has taken advantage of many cases in which a plant stores up starch in tubers underground, after it has borne its flowers, and ripened its seed in the air. By a wise selection of the best for propagation the tendency of any plant to do that may be increased enormously. If the potato were to fail us entirely, there are wild plants that could soon be trained to take its place. In all these

cases nature has only been making more careful provision for the future of her favorites.

She also prepares the seed for seeking its proper location. Some are armed with hooks and barbs, and claws, with parachutes and wings, feathers, elastic springs and coiled shafts, for catching rides and traveling afoot, for flying and floating, jumping and being discharged from bombs, and sent off like rockets. One kind of seed is discharged from capsules and has its base tipped with a bit of mucilage which causes it to adhere to whatever it touches. Take notice that this seed flies out of the *bottom* of the capsule, and not the top. Another is grooved curiously so that it revolves with a touch. Grass seeds travel by means of barbs on their awns, which are also twisted in some cases. Perhaps some of you have as children tried putting a head of rye up your sleeve to see how soon it would come out at your neck.

Seeds which retain their vitality a long time seem to have been varnished. Spores of fungi cannot be wetted, but float in water. The earth is full of them. I have put a pinch of earth from my garden in a drop of water and draining it upon glass, found on exploring it with a lens, the spurred spores of corn smut constantly appearing, as well as many others.

So very careful is nature to keep up the generation of plants that she will vary her methods in unusual cases. The painted corolla will be undeveloped, but the pollen will be furnished and the embryo fertilized and ripened without a failure on the part of the plant if the soil be too poor, or the moisture insufficient. If we decrease the amount of nutrition given to a healthy, vigorous plant that has not heretofore borne fruit, it will immediately form flower buds. A season of moderate dryness is more favorable to the formation of fruit buds than one of excessive moisture. Excessive drought may destroy the fruit, but seldom hinders the growth of buds for the next year. It has usually the contrary effect. One thing in favor of your fruit belt is the dry weather during August and September.

So well is this known that gardeners sometimes cut off a portion of the roots of trees which grow too much wood. An excess of nutrition will prevent flowering. Florists continually cut off their flowers, and as constantly the plant puts out more. Many of our common flowers will bloom all summer if we pick off the seed vessels before they ripen, but in that case the plant must have no other mode of natural increase, by bulbs or tubers, for most plants have done their work when the next generation is provided for.

Plants have a power of selecting their food, and seldom make mistakes. To be sure, it does not matter so much, because it is only the crude material that they take up into the leaves, where all the sifting, and sorting, and manufacturing is done. If this were not so, it would be useless to graft or bud any tree or plant. What a fruit is to be depends entirely on the leaves. The sap that comes down from the leaves makes the whole plant or tree, and its blossoms and fruit. The stock cannot possibly affect the graft, but the graft does affect the stock more or less. A plant with variegated foliage has been grafted upon one of its own kind with plain foliage, and the foliage of the stock became mottled, and when the graft was reversed the foliage became plain. It must necessarily be so, since all the sap is prepared in the leaves. Trees that bear fruit of large size or great quantity, must have a full bushy top, with large leafage, or the delicate work of transmitting the gases of water and the air into starch and then into sugar, mixing and flavoring with malic acid in one, citric acid in another, cannot go on.

The roots have a curious sensitiveness to the presence of gases, whether in

the form of water or in soils rich in ammonia, which enters largely into the essentials of healthy plant growth. They creep here and there as certainly as if they could taste or smell. A slender white thread will become the pipe through which the gleanings of millions of roots may pass. There are plants which can be fed like animals,—indeed they can catch animal food and digest it. Let us try to imagine the degree of sensibility in a creature which is alive, which eats and drinks, which sleeps and wakes, catches and digests animal food, which follows a scent, takes notice of light, chooses the useful and discards the noxious elements, and knows the seasons as well as most animals.

Can it be that we cause pain when we pluck a rose; that a tree really *groans* when it is felled; that the fabled Dryads of mythological lore were but a glimmering of the truth; that trees and plants have life, are inhabited by a sense, not indeed as large as that of animals, whose eyes answer ours with kindly intelligence, but an ethereal something which we have yet to become conscious of. They rejoice in their marriage time of bud and flower. Out of that time of beauty and bloom will there grow for us a truth which shall be like the laws which govern the stars in the sky, a new revelation of order, of symmetry, and of infinite love. The truth is always very near us. If we could but touch the spark of life which eludes us so constantly, we should have the key to the whole. Is the life of a plant like that of an animal? How can we know? If we break the casket the subtle essence escapes us. The mystery is not for our minds to solve. The Creator of all holds the key as He also holds the lives of all in His hand.

SAUGATUCK AND GANGES POMOLOGICAL SOCIETY.

OFFICERS FOR 1880.

President—Rev. J. F. Taylor.*Vice Presidents*—Alexander Hamilton, Levi Loomis, Y. H. Banelli, Wm. Corner, P. Purdy, N. W. Lewis.*Secretary*—Byron Markham.*Treasurer*—J. S. Owen.*Directors*—J. P. Leland, S. R. Lewis, A. Hamilton, H. L. House.*February Meeting.*

At the February meeting of the society Mr. William Corner read the following essay on

LIME, SALT AND ASHES FOR PEACH TREES.

I am aware that the subject we have before us is of vital importance to every fruit-grower in the land, and, strange as it may seem, it has been under consideration for at least one hundred years. It is unfortunate that you should have chosen one who has so little experience with lime, salt and ashes for the peach tree, but what little I have had I will try to relate.

First, Lime I consider one of the very best things for any fungous growth, or disease produced by fungous plants.

For instance in the years 1856,—7—8, our wheat was badly affected with smut. The remedy was to put the seed on the barn floor and wet it with water and salt, and then dry it with strong lime. I never saw any wheat sown in England without the same process, and it has been effectual in destroying smut there and here.

Now in regard to fruit trees I have never used it on the peach tree, but when I was about sixteen years of age the man with whom I was living went to the city and left me working in the garden. I noticed an apple tree in the center of it that was covered with moss. The tree was about four inches in diameter but not making any growth. I thought I would try an experiment upon it. I made a pretty heavy dose of lime and soil, mixed and spread it on the ground about as far out as the limbs extended, spaded it in and said nothing but watched the effect. The first year the moss was gone and the tree made some growth. The second year the foliage looked rich, and it made a heavy growth, with some fine fruit. One day the owner and myself were walking through the garden when he exclaimed, "What has happened to this tree?" When I told what I had done. I proposed to use it the coming summer on my peach trees. And now as to the mode of using it. I would make up my mind how much I would put to each tree. Then put enough for four trees in one pile, cover it up with the soil and let it slake, then spread it under the trees as far as the limbs extend and cultivate or work in with the spring drag; never plow in. Now in regard to using it in the foliage; I would get as good lime as I could find, slake it, put it in a pail, and with a small tin scoop

throw it up into the trees when they were a little damp. This idea was advanced at the meeting of our State Society at Paw Paw by one of the members who had used it for two years with good results.

As to health of trees, freeing the fruit from insects, etc., the uses of lime might be mentioned without number. For instance, at Mr. Whittlesey's, near St. Joseph, last fall, I saw some grape vines that were badly affected with mildew. He sifted slaked lime over them and stopped it completely. I have seen the mildew stopped on the turnip crop by a sifting of lime. Many other things might be mentioned in favor of using lime on other trees, and why not for the peach?

Salt I have used on my peach land for several years with good results. It has been said that they never knew a case of the yellows in Europe; but President Lyon, at the December meeting at Paw Paw, said we had sent it over from America, either in some trees or pits. Now the deposit of salt from the ocean is from 36 to 40 pounds per acre annually in England, and may not this fact have something to do with the health of the peach tree, and would it not say use salt in the peach orchard? One thing I do know, that it is destructive to the various tribes of insects; not that it will destroy the full grown insect, but it will the larva, and that which would be your enemy if alive, is now a manure.

I think I hear some one ask, how would you use it for the peach orchard? I draw it as near as I can to the place where I want to use it, then take an old tin pail and sow it as I would wheat, about two bushels per acre.

One thing I would mention here. In the fall of 1876 I sowed about one acre and a half to salt that my Jacques Rareripec trees stand on. Mr. Hattersly, not knowing that I had sown it, gave it another dose, and last fall I never saw a nicer lot of peaches. They had not been punctured by insects, and the trees were the picture of health. Great quantities of salt are used by English farmers as a fertilizer, and it has been proved in their practice, that sixteen bushels per acre is destructive of all vegetation, and that eight bushels is in excess of what can be judiciously employed. I believe that from two to three bushels is all that we ought to sow in our peach orchards, and that farmers should be instructed that large quantities are not required on any crop, and that one dressing will be perceptible for several years.

Ashes I have been in the habit of using all I could get, ever since I commenced raising peaches for market, being careful to keep them dry and so preserve all their strength, taking the idea from an European writer that the peach tree would live and prosper until it was 60 years old if it could get all the alkali it wanted. In working, and always in grubbing, I kept a pan of ashes by my side; when I caught the grub I would throw out all the old gum, etc., and rub a double handful of the ashes on the stock of the tree, then put in fresh soil from the centre of the rows.

I have wondered many, many times, if ever one-fourth of our peach men thought of the heavy draught on the soil, and of the ingredients there must be in the soil to supply the enormous demand. Take it for granted, the peach tree must have a large amount of alkali, is it wise to plant the land to potatoes while the trees are yet young? Taking from the soil the very thing that the peach must have to live on, and produce such enormous crops,—is it wise for our peach men to take such crops, and put the money in their pockets, and never return anything to the soil, not even a good cultivation? It seems to me that the majority of us are guilty. And now I come to the great problem: Shall we reform or shall we lose the beautiful peach? We may talk, we may

write, we may have pomological societies of State, county, and town, but it does not put the lime, the salt, the ashes, etc., to the soil.

Brother fruit men, let us work the coming season in earnest,—give the soil a liberal supply from the barnyard, from the lime kiln, from the refuse salt, and all the ashes we can get.

In the discussion which followed, the Secretary said it was an utter impossibility to get ashes sufficient for all the peach orchards, and asked if Mr. Corner thought concentrated lye would answer the same purpose. Mr. Corner said it was probably the next best thing that could be done, we should get all the alkali but would lose one important ingredient the ash or wood producing quality of the ashes, still where ashes could not be obtained, use the concentrated lye, after greatly reducing it.

The President, M. B. Williams (who had arrived by this time) said he had had some experience in the use of salt, but not sufficient to form any opinion as to its usefulness. He had sown some in his orchard, but all in one contiguous body; in order to know whether it was particularly beneficial it should have been in strips or alternate rows of trees then he could have told something about it; it might not have been sown long enough to reap any benefit. We sometimes use barnyard manure on our orchards without any perceptible benefit for a year or two but in the end we know it is beneficial. It might be so with salt. He felt sure that salt had a good effect in destroying insects. The question was how much ought we to use. He thought plums and quinces would stand very much more than grapes and cherries.

Mr. Corner said we must keep salt away from the grapes, they did not require it.

J. S. Owen said his experience with salt on quinces had been very unfortunate, he sowed salt on some of his quince trees and it killed every one of them.

Mr. Williams said he presumed the manner of sowing would have much to do with it. If sown broadcast two bushels to the acre might be very beneficial, while if the same amount was put around the bodies of a few trees it would be likely to prove disastrous.

Mr. E. Hoare said his father was an English farmer, and had a large farm situated near the sea shore, and it was his practice to use thousands of bushels of muscles on his land as manure; they were from the salt water and were consequently impregnated largely with salt. They were considered the most valuable manure to be had. All kinds of fish offal was of the greatest benefit to fruit trees and there was large quantities of it at the mouth of the river to be had every year for the hauling, and yet it was suffered to go to waste; he would assure them that no cut worms could survive an application of fish oil. Sea weed was also largely used as a manure and was considered valuable on account of the salt it contained.

Mr. Peter Foley said his neighbor Mr. John VanVulpin used twenty pounds of salt on nine quince trees about five years old, with good results.

Mr. A. W. Dressel had about three-fourths of an acre of land sown to onions six years ago. The cut worms were so thick that there was scarcely a square inch free from them. He sowed two pailfuls of salt on the piece, which killed all the cut worms, and none had ever been seen there since.

Mr. Doud had used ashes on his fruit trees, believed it produced a good growth, and was destructive to insects injurious to fruit trees.

March Meeting.

At the March meeting, J. P. Leland read an essay from which we extract as follows:

Look at the map of these United States and see how many spots you can put your finger upon that are reliable for a peach crop; the localities are but a speck in our vast territory, and I would suggest to future geographers that the Michigan peach belt should have a long golden line. The unavoidable inference is, that with such a limited territory for the raising of this choice fruit the business must continue highly remunerative on this shore. The discrimination in favor of peach culture compared with agriculture is too palpable for an extended notice.

The net returns from the best farming in this town does not exceed twenty dollars per acre, but it is a meager business if an acre of peach trees fails to roll in from one to two hundred dollars. With this incomparable advantage in favor of the peach, we shall be sadly remiss in our duties if there is any failure on our part to combat any and all enemies to our success.

The scourge which has crept along down from St. Joe and Benton Harbor has fastened its deadly infection upon our orchards. Like the devastating plague which is knocking at the doors of European cities for human victims, this blight is rapping at our doors for our most flattering pecuniary interests.

We cannot tamper with this unwelcome visitor by applying remedial agents to our sick orchards, neither will sanitary cordons or blockades stay its onward march. There is but one alternative and that is death. We must kill it, or it will kill us, or at least our business. It will not do for but a few to go into this destructive work, there must be concert of action; all must be alive and interested; not a diseased tree should escape annihilation; with such work faithfully inaugurated then it would be advisable to plant peach trees.

Mr. President, allow me to incidentally observe at this time, for this society's consideration, the imperative importance of the peach growers of Saugatuck and Ganges uniting for the destruction of all trees afflicted with the yellows. Let the State law do its work, which is a long stride toward success, but the work must be positive and effective; not an occasion for any doubt. There should be no absence of thoroughness in enforcing any wholesome law. The proposed organization might materially assist any law for the destruction of diseased trees.

Where to get our peach trees is an easy matter to decide if we are to consult these sweet and affable tree peddlers. These itinerants who travel up and down this shore have the most unbounded suavity, and brass. I do not refer to local nurserymen in our midst, but those soft, smooth rascals who drop down upon us and asseverate with holy hands raised to high heaven that their trees are exempt from all disorders. The pits came from away up towards the north pole where vegetable infection is unknown, the buds are selected with the most punctillious care. It is difficult for any legitimate or illegitimate business to get out of its old ruts. It is like chronic theology, which sticks to the good old way.

Merchants will hang on to their time-honored forms and modes even if their way of doing business is a great wrong to a community, but when their customers demand a change, reformation commences. It will not do to let nurserymen out of this category. If we purchase stock of these sometimes crooked fellows, it is done at a great risk. There is no knowledge that in our bargains it does not include that almost omnipresent enemy, the yellows.

Where shall we get our peach trees? from our own grounds; plant our own seeds, raise our own trees, and see to our own budding. This is practicable and with patience and perseverance all can do it.

There is another protection against imposition in nursery stock which some may think more feasible. It is to get our trees from home nurseries, from men who are known to be truthful, men who are endeavoring to build up an honest business.

Steer clear of distant nurseries and encourage home industry.

Mr. J. P. Wade answered the question,

SHALL WE PLANT MORE PEACH TREES?

I say yes. I believe it to be an established fact in every country that as it grows older the land accumulates in the hands of the few as owners, and the farms are worked by tenants and hired help.

In peach-growing sections the tendency seems to be to divide up into smaller places, each owning his own homestead.

To my mind this is a valuable feature, for in proportion as the people own their own homes and share the responsibilities of society and government, just in that proportion are they better citizens socially and morally, and our institutions are safer and more permanent.

Our soil is peculiarly adapted to peach-growing for the following reasons: First, particular kinds and varieties of the peach require different soils, for their successful cultivation, some require heavy, and some light soils, and the peach-grower in order to succeed well must raise a variety that ripen in succession; this necessitates a variety of soils. This diversity of soil is a peculiar characteristic of our vicinity that I have never seen equaled in any other section of country, and yet we are tolerably free from heavy clay or drifting sands. And in this section the peach attains its greatest size and excellence, as our numerous exhibitions and first premiums have abundantly demonstrated, having never failed of carrying off the first prize when we have competed for it. There is one other essential of still greater importance, and that is climate.

I believe that we are favored with a climate unexcelled if not unequaled in this latitude between the Atlantic coast and the Rocky mountains, for the correctness of which I would refer you to the indications of the thermometer compared with other places for the last ten years.

More than all others it would seem that the farmer might and would be possessor of a peach orchard at the present low price of trees, although it be small.

But what do we find? wheat, corn, etc., all good enough and desirable in their place, but one doesn't want to live on this alone, we want something more than bread and meat for breakfast, and meat and bread for dinner, and what is left for supper. You may happen in some place where your diet will consist of bread, dried apples and potatoes, early in the season, later the potatoes will be missing and women folks may be seen searching out of doors that possibly they may find something green, every dock leaf is seized, and all the cow slips are made away with, and if there happen to be a few currant or gooseberry bushes their fruit will be laid under tribute about as soon as it is out of blossom and before it is worth any thing it is all gone.

Now wouldn't a can of good peaches, yes say 365 be more edible and healthy, and would not a farm with a peach orchard on it command a better price than

without it. As pomology is the oldest is it not one of the most important and pleasant occupations of life?

There is no country, no occupation, no society but has its objections, the most serious to this is the yellows and its prevalence is in districts where there are a large number of trees in close proximity.

We judge of the future by the past; and by that, twelve years is the least number that the yellows has made general destruction to the peach. That being the case and yellows having already but just made a beginning here, we have ample time to plant trees and raise peaches profitably; and is it not possible that something can be done to retard or even permanently cure that dreaded scourge to the peach tree? One thing is certain, if it is a fungus of which the mushroom and toadstool are species, also the mould which sometimes shows its appearance on stale bread, and also shows itself so destructive to the grape vine leaves and fruit, it can be dispelled with sulphur as all green-house men will testify either by fumigation or mixing with water and using with a syringe made for that purpose. It might be expensive to use on peach trees, but is as sure to dispel it as the sun's rays are to dispel the dew upon the grass.

So far as finance is concerned the more of the yellows the higher the price of good peaches.

Moore, and also Purdy, state that some of their peaches sold as high as 5 and 7 cents each last season, and if they can get that price why cannot all of us if we take the same care, and if it pays to do a thing at all, does it not pay to do it well?

Our orchards may all be swept off by the yellows at no very distant day, but one thing seems to be a settled fact, that poor exhausted soils and lack of cultivation stunts a sickly tree; such trees are more liable to be swept off by the yellows. It was so in New Jersey and St. Joe, and to all appearance is so here, although the richer and well cultivated orchards are liable to go the same way eventually. I look at it in the same light as I do the cultivation of trees; that is, that more trees are hurt from neglect than from over cultivation. I rather take my chances on good cultivation, strong healthy growth, than poorly cultivated, stunted trees. They will live longer, bear better fruit and are less liable to disease; although well cultivated strong healthy trees have been killed by yellows as well as sickly ones, there may be some exceptions to this rule as well as to most other rules.

Plant your trees, plant good trees, give them good cultivation, good care, and you will get good fruit; and look the peach belt over and talk with the peach growers and shippers about orchards, and the most remunerative are those that get the care and cultivation.

WHAT VARIETIES OF FRUIT SHALL WE CULTIVATE?

Was answered as follows by J. F. Taylor:

This subject seems quite ill-timed, just now, in view of the catalogue of fruit recently published by the Michigan State Pomological Society. That catalogue combines the wisdom and experience of all the old fruit-growers in the State, and we can not hope to improve upon it at the present time.

But as it becomes necessary for every one to modify his list of fruits for cultivation by the locality in which he lives, we may venture to say a few words.

Soils, climate and markets are of the first importance in the cultivation of fruits. They also have great influence on varieties. A variety that is good and

profitable in one locality may be worthless in another, and one that gives good results on a heavy soil may be of little account on the sand.

We allude to these points because they must always be kept in mind when we are selecting trees and plants for successful cultivation either for home use or market.

With these facts before us, what varieties shall we cultivate?

The answer to this question is broad or narrow, according to the plan of treatment and the object in view. If we speak of the fruits which any of us have cultivated, unless, perchance, some one has been, or is in the nursery business, the question is very narrow. It evidently requires many years of labor and close observation to test any considerable number of any class of fruits on different soils, as they are presented in the curriculum of pomology.

But if we treat the subject theoretically, deriving our knowledge from agricultural papers and nurserymen's catalogues of fruits, the answer will be very broad.

It is not difficult to make out a list of fruits which every man who pretends to engage in the business ought to have on his grounds, but to select the varieties that are best adapted to the soil, climate and markets of any particular locality, is quite another thing.

A full list of fruits for one engaged in this branch of business would read as follows: Apples, pears, peaches, plums, quinces, cherries, strawberries, raspberries, blackberries, currants, gooseberries, and grapes.

All of these fruits may be cultivated in this latitude with more or less profit, according to their capacity for transportation to market. As the profits on all kinds of fruit are variable, it is quite important to be prepared for the fluctuations of markets, especially when they rule above the cost of production. For example,—because apples gave the producer a small margin last autumn no one would think of cutting down his orchard and replacing it with peaches; and if strawberries did not bring in satisfactory returns last year we shall doubtless do well to give them better cultivation and thereby secure better returns this year.

But the difficulties we have to encounter are not so much in the kinds of fruits most desirable to cultivate, but rather in the varieties which will produce the best results in a given locality. For example, in the catalogue recently published by the Michigan State Pomological Society there is a list of 239 varieties of apples which have gained some notoriety in this State. Some of these are doubtless good, others are better, and a few are *best*; but who can read the list over and select the best without some assistance or experience? The task is difficult. Even experienced fruit men recommended varieties last year which they now condemn. We appreciate their honesty, even when we are victimized by their hastily formed opinions. To recommend any variety of fruit, a man should be familiar with its history. He should be acquainted with its habits of growth and productiveness and the quality of the fruit on all kinds of soil, such as clay, sand and gravel.

Climate also, considered as dry or moist, hot or cold,—should have due weight in making a choice of varieties of fruit for cultivation. Fruits adapted to the lake shore may not be worth cultivation in the interior of the State, and certain it is, that some varieties which have a good reputation in other localities are worthless here. There are, however, a few things to be kept in mind when we are selecting varieties of fruit for cultivation.

Every one who plants an orchard wants a succession of fruits. Not only a succession of kinds, but also a succession of varieties of the various kinds.

And this succession should vary in quantity according to the object in view. If for the family, only a few trees will be desirable under each variety, but for market, transportation and consumption are the only limitations.

In this locality winter apples are of vastly more importance than any others, or I might say, than all others. In selecting varieties of winter apples for cultivation, it is well to have some regard to their keeping qualities, as early, medium, and late. Varieties that will keep the longest are generally the most profitable. Next in order is the quality of apples for dessert and cooking purposes. Size and color also have much to do with the sale of apples.

With these specifications we may form some idea of the best varieties to cultivate. They must be good keepers and of good quality—from medium to large in size, and for the most part highly colored. Greenings and russets may, and do have qualities which will ever make them desirable and profitable, and hence should not be neglected,—but they are not to occupy the first place. With these facts before us, it seems desirable to cultivate very largely of those red apples which are of the Baldwin type. We do not propose to give a list, but strong-growing trees are to be preferred, other things being equal.

What we have said of apples is to some extent true of all other fruits. If cherries are profitable, in this locality, a succession would undoubtedly be desirable.

In regard to peaches, this point is also worthy of our attention. Varieties should follow each other in quick succession to secure the best results. But as the season advances and grows colder, larger quantities of any desirable variety may be more safely and more easily handled.

There are a number of early varieties, which have not been fully tested in this locality. Some of these it is to be hoped will prove more desirable than Hale's Early. For second early our orchards are not well supplied. Between the ripening of Hale's Early and Early Crawford there are a number of varieties coming into market, but none of them compare favorably for shipping purposes with the Barnard or Crawford. The Honest John is too small. Cooledge's Favorite is too delicate to handle in warm weather. When the Crawford's Early, the Barnard and the old Mixon are ripening there is nothing better for use or transportation. The Mountain Rose and the Foster are well spoken of, and may prove to be strong competitors with these old, well tried sorts, but will not easily surpass them. Later in the season we find Jacques' coming into market. It is well spoken of, but does not give entire satisfaction. Crawford's Late, Hill's Chili, and Smock's Free are unsurpassed among the late varieties. Others might be added which would give good satisfaction, but would not increase the profits of an orchard.

In regard to pears we have only a word at present. Of these, we should select the Bartlett and Flemish Beauty as standards, and the Duchess d'Angoulême on the quince.

In regard to plums, we can only say that we think they should have a place in every collection of fruit trees, but as to the most profitable varieties for market we are not able to determine.

Quinces may be added when soil and circumstances will allow, and the measure of success can only be determined by the trial.

Grapes also will bring their own reward to the faithful cultivator. And for this latitude, perhaps, the Concord and Delaware are unsurpassed for market purposes, however much we may enlarge the list for our own tables.

Berries occupy a separate place, but may be profitably introduced with larger

fruits. They are generally profitable or unprofitable, according to their size and condition when offered in market.

In the early part of the season we have strawberries. Large ones are always salable at fair prices; small ones rarely. Hence, to secure good results, from year to year, a moist soil and good cultivation are indispensable. With these conditions faithfully fulfilled a large number of varieties may give satisfaction, but a few are preferable. All things considered, Willson's Albany stands first, because with poor cultivation it is worth something, and with good cultivation it makes up in quantity what it lacks in quality. Then, too, it will give fair results on all kinds of soil, and in all localities. In these particulars, it is unsurpassed, by any variety in cultivation. But no fruit-culturist should confine himself to a single variety. It is desirable to have a succession. Early, medium, and late varieties are not to be lost sight of. Early strawberries, in this locality, are only desirable for home use. Medium and late find a market. On sandy soils, the Charles Downing is a good variety, and on heavy soils, the Triomphe de Gand. As a late berry, the Kentucky is gaining a good reputation. Other varieties have their merits, but should be tested on a small scale until we have learned the conditions of success.

Raspberries come next in order, and may be cultivated to a limited extent where the soil is strong and moist. Black cap varieties are to be preferred for shipping, although for quality they are surpassed by the red.

Blackberries are second only to strawberries, in importance, as a fruit for cultivation. And as the wild ones have been so extensively destroyed by forest fires, we look for an increased interest in their culture. The Kittatinny is preferable.

Currants are not to be neglected, and some seasons are very remunerative. The Red Dutch and the La Versaillaise are best for market, while the White Dutch and White Grape are good for the table.

May Meeting.

The May meeting was devoted to the curculio, and methods of circumventing the "Little Turk."

June Meeting.

The session was devoted to insects, especially the Rose Chafer; an essay having been presented by J. S. Owen, the prominent points of which have been before inserted in our pomological transactions.

July Meeting.

The session in July was largely given up to Mr. R. B. Newnham, who reviewed very carefully what had been said and written on the insect enemies of the apple. The discussion which followed was very interesting as bringing out the experience of different fruit growers of the vicinity, in combatting injurious insects.

August Meeting.

The yellows occupied the whole session, and Hon. N. W. Lewis gave the text, by reading a short yet comprehensive essay on the subject.

There was a long discussion followed the reading of this essay, but not much was said that was not embraced in the essay. President Lyon, of the State Pomological Society, was present and gave some of his experience, which was quite encouraging to those present. He said he had seen no better way to treat the disease than to exterminate the tree root and branch. It was no new thing, it prevailed a hundred years ago, and likely would show itself for all time to come. This hundred years of study and experience had not led to the discovery of any knowledge of its origin, cause, or cure. This was not remarkable. It was the same precisely with contagious diseases in the human family. The best physicians in the land, have given to these subjects the most careful study, and the most elaborate experiments, and yet no physician has as yet discovered anything that would throw light upon first causes.

We do not the less honor the profession for this failure. What they have discovered is of vast importance and we give them credit accordingly. They have learned their effect, and the best way to prevent the dangerous results which once attended these loathsome diseases. They have learned if you would avoid the disease you must avoid the contagion. And so it is with the yellows in the peach tree. We cannot take up and remove our orchards as we can our persons on the approach of the disease; but when we have found where it has made a lodgment in any particular trees we can take them up and remove them out of the way, and thus remove the danger which threatens others. There are still as many opinions among fruit men as ever, as to how the disease was spread, but he believed it was more generally considered it was spread by means of the pollen, than any other way. The fact that trees in near proximity were no more likely to be affected than those remote, was explained by the fact that not one particle of pollen in a thousand was infected, even on the infected tree, and it was as likely to be the infected particle that was carried to a distance as any other. Wherever this infected pollen may happen to light it will carry with it the virus of the disease, although it may fall on a blossom at the very extremity of the longest limb, that tree is doomed, and the moment it is discovered, the only safe way is to destroy the tree, and thus destroy the opportunity for evil. Another subject in connection with this disease is, its effect on young trees. This shows that, although the disease may be carried by pollen, it is not the only way; pruning a tree with a knife has been used to prune a diseased tree, budding from diseased trees, and probably many others. It may be a satisfaction to know that a young tree affected with the disease, has not vitality sufficient to recover from the shock of removal and transplanting, and if it does survive the first year it will not be likely to the next.

Another method of infection is feared by some, that is, that while plowing, if the roots of the diseased trees are cut by the plow, enough of the poison will adhere to it to infect a healthy tree should one of its roots be cut, but probably the friction of the earth would remove the infection before it could do any harm.

There is not much danger from using pits of diseased trees. Extended examination showed that such pits were usually without meats, so of course they could not grow.

Great care should be used in removing diseased trees. It would not do to fall the trees as you would in cutting down a forest, for in this way you would greatly endanger those near by. No part of an infected tree should come in contact with a healthy one. To avoid this it should be cut down, one limb at

a time, and removed from the orchard, and all the time, both in cutting and removing, the greatest care should be used not to allow any contact with healthy trees. It is just as necessary to remove all the roots possible, as tops, and this is required by the new law.

He said the disease in the vicinity of South Haven was evidently on the decrease, not one-tenth as many new cases this year as last, and could see no reason why we may not continue to successfully and profitably raise the peach.

August 30th another session was held at which Mr. Newnham concluded his address on "Insects injurious to the Apple," quoting largely from Prof. Cook and other eminent entomologists. Of course the session could not close without a discussion of the yellows, but no new facts were brought out. At the conclusion of this meeting it was determined to adjourn till the last Saturday in October, which meeting was still further adjourned till November, the annual meeting for the election of officers. The result of this election is already given.

As will be seen we have held monthly meetings. The interest has not flagged and the belief in the efficiency of local pomological societies has been greatly strengthened, and we commence the new year with increased membership and increased faith in the great State of Michigan as distinctively *the* Pomological State of the Union, and our locality as the most favored of this peculiarly favored State.

BYRON MARKHAM, *Secretary*.

WASHTENAW COUNTY POMOLOGICAL SOCIETY.

The society holds monthly meetings at Ann Arbor, and on the completion of the new court house, the County Board has assigned it a room in conjunction with the County Agricultural Society. Fruits and flowers of the season are usually displayed at the meetings,—a feature that greatly adds to the usefulness and attraction of the society. The meetings are also well attended by the ladies, who take a deep interest in the progress of horticulture. Prof. Sage and quartette enliven the meetings with musical entertainments, a pleasure highly appreciated by all.

November Meeting, 1878.

The pear was the subject selected for discussion. Mr. Evert H. Scott read a paper on this topic, in which he said that for his own pear orchard he selected an elevated site; soil, a strong clay. He favored low headed trees, and but one to two years from bud or graft. The system of pruning he recommends to be such as to protect the trunk by the branches. He cultivates thoroughly, but does not manure. For market varieties, he recommended the Bartlett, Flemish Beauty, Sheldon, Beurré Diel, Lawrence, and Winter Nélis. For amateur culture, he would add Seckel, Rozteizer and White Doyenné.

Mr. N. B. Covert spoke highly of the Beurré Gifford, it having borne uniformly good crops with him for twenty-three years, and he likes its quality well. He regards the Seckel as the best of all pears.

Mr. J. D. Baldwin said that he had given his best efforts to the cultivation of the pear, but failed on account of the blight. He thought well of it as a market fruit, if it could be successfully grown. He hoped that the barrier to its success would in time be overcome.

President Scott believed that the pear can be successfully grown. The much dreaded blight, he had every reason to believe, could be conquered by cutting off the affected branches promptly and low enough to find sound wood. Stable manure freely used around pear trees, he believes tends to bring on the blight.

Mr. J. J. Parshall presented the same views regarding the use of stable manure.

Mr. Jacob Ganzhorn said that there is but little loss occurring to the pear tree till it gets to bearing; then the blight is most destructive, and he finds few trees in the county over twelve to fifteen years old. He hoped to raise the pear more abundantly on dwarf trees. The latter, he said, come into bearing quickly; the trees can be planted close together, and where one is lost by the blight another is soon established again in its place. The failures with dwarf trees, he attributed to a want of a proper knowledge in cultivating the ground, thinning the fruit, and pruning.

January Meeting, 1879.

There was no special programme prepared; the meeting was largely occupied by reports of the annual meeting of the State Pomological Society held

in December, 1878, at Paw Paw, by S. W. Dorr and J. D. Baldwin, who were delegates from this society.

Mr. N. B. Covert spoke of his experience in growing the apple, and the loss he suffered by ordering trees from irresponsible tree agents when he first started to grow fruit. He has grown the apple for the past 20 years, and found his average crop satisfactorily profitable.

Mr. S. W. Dorr said that he was more interested in the peach, but as the apple was started upon he gave his experience with the latter fruit. He tried the cultivation of various crops in his orchard (which is somewhat extensive), but now favors peas most. The crop he allows the hogs to eat up in the field. The "sod-culture" to the apple he found the least paying. Liberal manuring and cultivating the orchard he regards essential to the best success. From his large experience, he believes the growing of apples as profitable as any other branch of agricultural industry; but like any other successful enterprise, must be thoroughly managed. The Baldwin is his favorite market apple.

Mr. J. D. Baldwin was called upon by the President to tell what he thought of the difference between a sandy and a clay soil for the peach.

He replied that he would rather pay \$100 per acre for clay land for growing the peach upon than to take sandy soil for nothing. In fact, he said he would have nothing to do with sandy soil for the peach.

He added that the location of a peach orchard should have perfect air-drainage.

February Meeting.

The society met with the Farmer's Club on Feb. 15th. The subjects discussed were mainly pertaining to farming.

March Meeting.

In the March meeting the Farmer's Club met with this society, the discussions covering farm and fruit topics.

Mr. S. W. Dorr, who was a delegate of this society to the February meeting of the State Pomological Society, held at Lansing, made a report upon the same in writing, and also read a paper on the disease of the peach and on the depredations of the curculio. Mr. Dorr was given a vote of thanks for his interesting report on the Lansing meeting and for his able paper on the peach and plum.

The question was asked if there was any redress from nurserymen who sell trees which, after bearing, prove not to be what they were bought for. After some discussion on the subject it was advised by the President to buy only of reliable nurserymen.

Mr. Dorr's paper treated largely of the yellows in the peach, and this aroused considerable anxiety among the peach-growers present to keep the baffling disease away from us. Caution was urged by Mr. J. D. Baldwin and others upon planters of the peach, that their supply of trees should not be ordered from places where the yellows exist.

Depredations committed by lawless people in stealing fruit were much dwelt upon, and all agreed that a great deal of unnecessary expense was incurred by the fruit-growers in being compelled to watch their fruits.

There was a large display of apples which greatly added to the interest of

the meeting, made by Messrs. E. H. Scott, J. D. Baldwin, N. B. Covert, N. S. Foster, S. W. Dorr and D. L. Godfrey. The collection was noticeable for the large size of the varieties exhibited and otherwise handsome appearance.

April Meeting.

The April meeting was chiefly devoted to the cultivation of small fruits. The Rev. Benjamin Day read a paper on this subject. The free use of small fruits was urged by Mr. Day, and he recommended their cultivation to all who have a garden. The new and improved varieties of the various small fruits were dwelt upon and contrasted with the old sorts. Especial stress was laid on cultivating the ground thoroughly and often. The soil and location of Washtenaw county, Mr. Day believes to be particularly adapted to the successful cultivation of small fruits. He said the time would come when this locality would be noted for the culture of small fruits.

Mr. J. D. Baldwin spoke favorably and enthusiastically of this branch of fruit culture and believed it to be more profitable than apple culture. Only the best varieties ought to be planted, and the business well managed in all its departments. Mr. Day has worked up a large plantation of the Cuthbert raspberry and was asked by Mr. Baldwin how it paid him. Mr. Day replied that he could not give exact figures, but believed \$300 to \$500 per acre can be realized from this variety. The Cuthbert is perfectly hardy, and a good shipper, two essential points for success in the cultivation of the raspberry.

President Scott said that we had men in our midst who push the cultivation of the peach, some the pear, some the small fruits, but he rose to defend the cultivation of the apple. This has been the leading fruit for the past forty years, and he believes it will be one of the most profitable fruits cultivated in the future. Small fruits, Mr. Scott contended, can be grown in localities where the apple does not succeed, but wherever the apple flourishes it is the leading fruit.

Mr. N. B. Covert gave his observations on the tent caterpillar and other insects injurious to the apple, and mentioned different kinds of birds that are favorable to the fruit interest. Breaking or tearing the nest of the tent caterpillar with a fishing rod, then jarring the trees, which causes the worms to fall, Mr. Covert believes a good way in destroying this insect.

Mr. J. D. Baldwin spoke of the injury done to the peach trees by the insect known as the peach borer. He allows a small square of sod (about four feet) to form around his peach trees. The sod hardens the soil so that the borer cannot penetrate it, and thus keeps them at bay. The practice is only good on clay soil. Sandy soil would not become hard enough to prevent the borer from penetrating.

Mr. D. L. Godfrey exhibited fine specimens of Golden Russett, Roxbury Russett, Northern Spy, Red Canada, Blue Pearmain and R. I. Greening apples. All were in a good state of preservation.

May Meeting.

At this meeting Mr. A. W. Toms made a fine display of plants in bloom.

Mr. Covert contributed a paper on birds, which called out some discussion on the question of whether the robin was a useful bird to the fruit-grower or not.

Mr. Ganzhorn read an extended paper on the cultivation of fruit, advocating thorough culture, with proper restriction to allow the wood of the new growth to ripen.

Mr. Baldwin reiterated his views upon cultivating the peach, which are found in the report of the proceedings of the State society.

June Meeting.

The June meeting of the society was held on the 21st, in the court house, according to appointment of the executive committee. President Scott in the chair.

The meeting was well attended—about as many ladies being present as gentlemen.

The strawberry and its culture, and an exhibition of this fruit, was the main work of this meeting, per programme.

Professor Sage, with his quartette, entertained the meeting with music, which was much enjoyed by all present. Mr. Toms, the Ann Arbor florist, made a beautiful display of cut flowers and plants in pots. The display of strawberries constituted the principal attraction of the meeting. The President called upon Mr. Baldwin to open the discussion. Mr. Baldwin said that what he might say on the strawberry was the experience of his wife. The ground, he believed, could be made too rich for the strawberry; as in that case the plants would grow too rank and at the expense of fruit. The President here asked if that was not the case with all fruit. Thoroughly cultivating the ground (Mr. Baldwin continued), thereby keeping the surface loose and mellow, is all that is needed to carry the crop through. Out of fourteen varieties they have under cultivation, he regards the Wilson as one of the best bearers. He spoke well of Barge's Seedling, a variety from Massachusetts, but thought it required another variety to be planted near by to fertilize it. Mr. Baldwin having a fine display of varieties on the table, here took up one after another, and on showing them to the meeting, gave his experience with each kind. The Jucunda, Monarch of the West, and Col. Cheney in this collection were very large and much admired by all present.

Charles H. Woodruff next took the floor, and spoke mainly of his seedling strawberries, of which he had a valuable collection on the table. One known as Woodruff's Seedling number one, fairly captured the meeting. The berries were large, uniform in size, dark red color, and conical in shape; flesh firm and solid. The quality of this berry was conceded by the meeting as first class. Mr. Woodruff said he grew it on light soil, and it was fully as productive as the Wilson, and grows as extensive as that famous variety. He was asked by Mr. Baldwin how it sold in the market, to which he replied that he obtained a cent more on a quart than was given to others. His seedling No. 2 is of large size, rather long, lighter in color, and of good quality; said by Mr. Woodruff to be productive. His other seedlings were shown on the stems—showing green berries with the ripe ones.

One of the most promising of these is one of a very bright straw color, resembling the Jucunda and very early; the first berries were picked on the fifth of June. It was labeled No. 83. The Great American was shown by Mr. Woodruff, of which he spoke favorably. It did well with him on a light soil, and he found it ripened early.

Mr. Everett Scott had sent in the Seneca Chief, a large and solid berry. It

was put on the table by President Scott, who spoke favorably in its behalf. He said that these specimens were the first picked and were not yet fairly ripe. He believed it to be a valuable late variety. The Wilson, the President esteems as one of our best strawberries.

Jacob Ganzhorn, Martin Clark, and Mrs. Sarah Fletcher were appointed a committee to examine the fruit on the table. A recess of ten minutes was then taken to give the committee an opportunity to perform the work imposed upon them.

On recalling the meeting to order by the President, the committee reported 16 plates of strawberries displayed, consisting of Barge's Seedling, Monarch of the West, Jucunda, Col. Cheney, Russell's Prolific, and Seth Boyden No. 30, by J. D. Baldwin. Great American, Woodruff's Seedlings Nos. 1, 2, 108, 120, 151, 153 and 283, by Charles H. Woodruff. Seneca Chief, by Everett Scott, and a wild strawberry by N. B. Covert.

For table use: Woodruff's Seedling No. 1, Seneca Chief as best late variety, and Woodruff's Seedlings Nos. 283, 151, 108, and 120 are recommended.

For canning: Jucunda, Monarch of the West, Woodruff's Seedling No. 2, and Col. Cheney.

Seth Boyden No. 30 the committee found to possess a very high flavor, but somewhat objectionable on account of the berries having tough points—the points being pressed inward. Seneca Chief, from what could be judged from its unripe state, was favorably considered as a late variety.

N. B. Covert next read a paper on ornithology.

President Scott here called attention to the fine collection of flowers made by Mr. Toms, and complimented the enterprising florist for his ability and fine taste exhibited in producing such an attractive display.

Two very fine fuchsia plants in full bloom, supported on flat wire frames, attracted much attention by all present, shown by Miss Miley.

Mrs. N. H. Pierce read a poem, entitled, "Small Things," which was listened to with close attention.

J. D. Baldwin spoke of the liability to rot to which the early peaches were subjected. He said that he throws slacked lime among his early varieties, and believes he arrests the rot to a great extent by this means. The Hale's Early, he said, was one the most subject to rot, and all of its seedlings. The Troth's Early, not early as the above, he said, was more free from the rot. He considers it a nice early peach.

Mr. Baldwin suggested to the meeting that peach baskets be made the subject for discussion at the next meeting, when he will tell what he knows about them.

N. B. Covert showed to the meeting specimens of stung apples, cherries, plums, peaches, etc., and had, also, cureulios with him in a bottle, which he brought in for those interested to examine. Mr. Covert said that he had watched the stinging of the different fruits for the past four weeks, and came to the conclusion that all were stung by the same cureulio. The jarring process he believed the most practical for destroying this insect.

Dried apples, by the Williams process, were handed to the secretary for distribution, through Mr. Baldwin, sent here by Mr. Williams, of South Haven, the inventor of the process. The apples presented a clear, white, creamy color, and seemed far superior to those dried by the common process.

After giving a vote of thanks to all who contributed to entertain the meet-

ing with displays of fruit, flowers and music, the meeting adjourned, leaving the time for holding the next meeting to be fixed by the Executive Committee.

August Meeting.

President Scott in the chair.

The secretary read circulars from the secretary of the State Pomological Society, regarding their annual exhibition to be held at Detroit in September, 1879. President Scott made an earnest appeal to the society to be represented at the State fair, and urged all to help forward the interests of this society. A committee was appointed consisting of S. W. Dorr, E. King, James Toms, Martin Clark, and Jacob Ganzhorn to collect fruits and flowers and take charge of the society's exhibit at the fair.

President Scott said that the Post and Tribune sent out circulars respecting fruit culture, throughout the State, and in answer to it, he mentioned to the meeting, that the secretary had written a reply on the fruit interest of this county, which he would like him to read. The secretary complied, reading as follows:

Strawberry culture is steadily increasing here and I consider it profitable. In the present season it was estimated that 100 bushels were consumed here daily, all grown here. Thus far the new varieties have gained no foothold here. After a few years' trial they succumb to the Wilson. The new varieties that were introduced within a year or two, of course, cannot be fairly judged till after a few years' trial. Some of our growers feel sanguine that some of them will make a stand. My first choice is the Wilson, next the Jucunda, for market. I am cultivating an acre, 95 per cent of which are the Wilson. I like the Charles Downing and Monarch of the West, but cannot endorse them yet as market berries. The Wilson will return more money for the labor and skill applied than any other variety I have tested.

On elevated ground the most profitable fruit grown here is the peach. Why? more bushels of peaches are grown to the acre than there are apples. One bushel of peaches sells for about the same money as five bushels of apples. This is the fourth crop of peaches here hand-running, the trees bearing a little more every year, thus increasing the yield of fruit according to the increase of growth of wood. The apple yields to its full capacity about every other year, whereas the peach is more uniform in its yield, or, rather, steadily increases its crop. The peach tree bears much younger than the apple. The peach is the most salable of all fruits.

Best six winter apples to my own taste, are Red Canada, Jonathan, Rhode Island Greening, American Golden Russet, Yellow Bellflower, and Baldwin. The last mentioned is the most profitable winter apple by a large percentage. The Baldwin succeeds well on elevated ground. Rhode Island Greening succeeds well; so do the Northern Spy and Red Canada. I store my apples in barrels, with both heads in. I cultivate the ground clean.

Fruit culture is on a steady gain here. It largely adds to the value of property, and secures quicker sales of the same.

Amsden's June, Hale's Early in moderate quantity, on account of being liable to rot on dry soil, Troth's Early, Early Crawford, Old Mixon, Late Crawford, Hill's Chili, and Smock Free, I regard the most profitable and best list of peaches that ripen in succession for this locality.

Concord grape for profit; in addition for family use, I grow the Hartford,

Delaware, Salem, Wilder, Iona, and Martha. I consider the peach very profitable; the grape moderately.

Berries of all kinds were abundant. Cherries yielded well. Apples light. Peaches very heavy. Grapes a full crop. Pears are plenty, coming mostly from young trees. Trees over 15 years old are rarely found. Quinces are bearing well. The culture of this fruit and the plum is strongly increasing.

The letter was fully discussed by the society in regard to the moderate prices for fruit. President Scott said cheap fruit is not inconsistent with fair profits, and the public health is promoted by the free use of fruits. The same views were shared by the others in attendance. N. B. Covert said that he remembered when 100 quarts of strawberries were sufficient to supply Ann Arbor; now, in the present season, 100 bushels were marketed here daily during the strawberry season.

The President alluded to the successful peach culture of Judge Lawrence and of the extensive fruit enterprise of Mr. J. D. Baldwin. The example set by Mr. Baldwin in the thorough management of his orchard, is highly commendable, and said he hoped that the fruit-growing public would follow in Mr. Baldwins' foot steps and so raise the standard of fruit culture.

September Meeting.

After the transaction of business the President announced a recess for a social chat and to give all an opportunity to taste of the new seedling grapes and peaches presented for examination by Chas. H. Woodruff.

One of these new grapes was white and the other black, both seedlings of the Concord. The one white was much admired. The seedling peach was large, yellow, with a red cheek, resembling the Barnard in shape, and Early Crawford in color. It was presented to the President, who is to report on its quality at the next meeting.

On re-calling the meeting to order, the President introduced Mrs. Pierce, who delighted the meeting with an essay. A vote of thanks was given to Mrs. Pierce in acknowledgment of her interesting paper.

The President asked Mr. Dorr, Vice President, to take the chair, as he wished to speak to the meeting. He said that he had labored with a society in Ohio for 20 years; he came here to Ann Arbor to rest, but feels still enthusiastic to build up a pomological society. The fruit interest he believed second to no other interest in the county. While he acknowledges the importance of other industries he considers the fruit interest one of the most important. He referred to the successful fruit enterprises of Mr. Baldwin and Judge Lawrence. In his own case, he said that his apple crop in Ohio had amounted to nearly \$4,000, and when he sold his place some of his fruit netted him \$200 per acre. More can be accomplished with the same outlay, than in other farm products. He alluded to the saying that fruit culture may be over done. This, he said, was feared 20 years ago, but is less apparent now. Washtenaw county he believes one of the foremost for fruit culture, and he hoped that more will engage in this business in the future.

Judge Page here took the floor, and said that he got entirely over being discouraged at our meetings. In the last meeting he learned more in a half hour than he could learn out of all the books. "I must say," he continued, "that President Scott is entirely correct in his remarks. The income of fruit, is better than that of farm products. This is one of the favorite States out of

37 for fruit culture. There is no better in the Union. This part of the State is the best part in the State. It is the peach belt of the State. Some of the New England States are good for apples, but in only a few localities, here even, does this fruit succeed. When I came away from there, I saw but one peach tree. As to raising grapes, I could grow them sometimes, but not with certainty. We can ship our fruit down there and find a market. The time is coming when there will be more attending these meetings."

Prof. Baur said while he agreed with some of the remarks made by our President and Judge Page, he believed that in the future, fruit-growing ought to become a separate business from farming. He believed that wheat growing was the leading industry and the most profitable. Fruit culture he feared would be overdone. The peach is profitable but is perishable. He never saw better fruit grown in any other part of the country than here. If men can give three, five, or six years without remuneration, they may in time become rich in fruit culture. But we must not go ahead with this business without system, and should be cautious in advising others to embark in fruit-growing.

Mr. Covert said apple-growing has paid twice as much as any other branch of agriculture. I shall not feel discouraged to advise my friends to go into fruit culture who have a liking for it. Mr. Covert admired the pomologist for his ever readiness to impart his knowledge of fruit culture, and his generous heart in inviting his friends to share with him the luscious fruits of his garden.

The President here said that he agreed with Mr. Baur in reference to wheat culture as a product for the whole country, but he hoped to see the time come when every farmer had a nice little orchard, and the finest strawberries and other fruits. No farm is complete without choice fruit on it. In regard to grapes, he differed with the gentleman who claims this section unexcelled. The islands in Lake Erie, he thought, produced better grapes.

Prof. Baur believed the quality of the grapes grown here as good as those grown on the islands; said that he, even now, plants the Catawba, and has no fear of being outdone on his grapes by the islands. He regards the Concord one of the best grapes, but shall grow the Catawba hereafter for a later market grape. He farther added that the fruit man could grow the fruit for the farmer better and cheaper.

October Meeting.

This was the meeting for election of officers, the result of which is announced at the head of this report. An entertaining paper was read by Mrs. Pierce.

November Meeting.

The canker worm was the topic of discussion at this meeting, but the points brought out were much the same as published in the proceedings of the State Society.

A special meeting was held this month for the consideration of yellows in the peach.

JACOB GANZHORN,
Secretary.

WORK OF THE SOCIETIES OF OTHER STATES.

In carrying on the work of our society, and making suggestions and amendments for its best interests, members of the Executive Committee have often inquired, "What are the horticultural societies of other States doing in these matters?" Again in taking an account of what we seem to be accomplishing, oftentimes we have been discouraged, because of the lack of appreciation on the part of the people of the State, and have wondered if other State associations devoted to horticulture had not the same serious difficulty.

For the purpose of answering such questions as these and also presenting to the patrons of our society information concerning the horticulture of other States, the secretary sent the following letter to the secretaries of other State horticultural societies with whom he was in correspondence:

MICHIGAN STATE POMOLOGICAL SOCIETY, {
Secretary's Office, Grand Rapids, Mich., Dec. 6th, 1879. }

MY DEAR SIR,—Will you kindly send me quite a full reply to each of the following questions at an early date?

1. What is the wording of your society name?
2. How is your society controlled?
3. Do you have State aid? If so, how much?
4. What is your method of work?
5. What special work have you now on hand?
6. How large a membership have you?
7. Do you have rooms in the State capitol?
8. How long have you been organized?
9. Is your work appreciated, and how?
10. What is the present condition of your society?

My object in addressing you this letter is to secure facts concerning the work of other associations, to help us in our labors. If you can by answering me soon give the information desired I purpose using your letter in my volume for 1879.

Yours inquiringly,

CHAS. W. GARFIELD.

Ten replies were received, the responses coming from the following States: Massachusetts, New York, New Jersey, Pennsylvania, Iowa, Indiana, Illinois, Minnesota, Ohio, and Kansas. They embody information that will be interesting and instructive to members of our society, and the secretary takes the liberty of quoting liberally from them in the order named above.

MASSACHUSETTS HORTICULTURAL SOCIETY.

From a letter written by Robert Manning, secretary of the Massachusetts society, and an address by the venerable President Wilder, we glean as follows:

The Massachusetts Horticultural Society was organized in 1829, and therefore has, in its age, turned a half century. The first president was Henry A. S. Dearborn, and from the organization it started out for a library of reference, and the result is the best horticultural library in the world. This society was broad in its objects from the first, looking toward improvement in every department of horticulture. It founded that beautiful cemetery, Mount Auburn, and has maintained regular exhibitions of horticultural products from its organization.

The improvement of varieties was entered upon systematically, and through the exhibition of the products, thus obtained, an immense number of new and valuable plants and fruits have been brought out to benefit American horticulture.

Careful attention has been given to nomenclature, and the Massachusetts society has done more than any other in clearing up the confusion of names in this country. It has brought out some of the best of our apples, pears, strawberries and grapes; has developed and placed before the public many of our most beautiful flowering shrubs; and has developed a taste for studies in landscape art which has spread from town to town, and State to State, until it may be truthfully remarked that our whole country is very largely indebted to this pioneer horticultural society for a large measure of its horticultural progress.

This Society in its officers has some peculiarities. Aside from a Recording Secretary elected at the annual meeting, a Secretary is appointed by the Executive committee. The Treasurer is appointed in the same way. No person is eligible to the presidency unless he has been a member of the society for the three years preceding an election. Two professors are elected at the annual meeting, one of Botany and one of Entomology.

The work of the society is largely in the hands of ten standing committees composed of fifty-two members in aggregate. These committees are chosen by ballot at the annual meeting.

The constitution of the society instructs the president, at a specified date preceding a regular election, to appoint a committee on nomination of officers.

In answer to some of the interrogatories sent him, Secretary Manning says: "We do not have State aid. The method of work is mainly through offering prizes for horticultural products; through discussions of horticultural subjects in the winter months, and through the library. In the fifty years of its existence the Society has given full one hundred thousand dollars in premiums and other rewards to those who have been instrumental in the advancement of horticulture. Besides the annual exhibition in September, and special shows of Indian Azaleas, Pelargoniums, Hardy Rhododendrons and Azaleas, Roses, Strawberries, Chrysanthemums, etc., weekly shows are held through the summer months. This is the main reliance for the promotion of the objects of the Society. We are now preparing the schedule of prizes for 1880. The discussions are quite fully reported in the transactions of the Society. The library is doubtless the best of its kind in the country, and we know of no

better in Europe. It comprises, say 3,500 volumes, many of them rare and costly. I do not think of anything that can be called special work, unless it is the publication of a history of the first fifty years of the Society, on which I have been engaged for a good while, and which is now in the hands of the printer. We have nine hundred members; do not occupy space in State Capitol; have been organized since March, 1829. In regard to the present condition of the Society, it is very much the same as that of individuals; we feel the pressure of the times in a lessening of our income, necessitating a reduction of the premium list, but notwithstanding this, the exhibitions have been kept up in a manner which evinces a gratifying interest in the Society as well as a love for horticulture on the part of the members."

WESTERN NEW YORK HORTICULTURAL SOCIETY.

Secretary P. C. Reynolds of the Western New York Horticultural Society gives the following reply to the list of questions:

Our society is now twenty-four years of age. It receives no State aid, and has a membership of about two hundred. Our work is carried on by means of standing and special committees and discussions at the annual meeting; and the society is under the direction of officers elected annually.

We have no special work now in hand. Our society is appreciated by the horticulturists of the world because of the experience and intelligence of many of its members, but the appreciation is only manifested by reading its proceedings and less than two hundred paying annual fees of one dollar.

The present condition of the society is about as prosperous as it has been at any time since its organization. It does its work by meeting in annual convention of two or three days, on which occasions scarcely enough money is raised to pay for printing its circulars and proceedings cheaply.

This society has a wide reputation and its discussions are quoted everywhere in horticultural circles. It has done much in giving Western New York its preëminent position as a fruit-growing region and a center for the distribution of nursery stock.

NEW JERSEY STATE HORTICULTURAL SOCIETY.

The New Jersey Society is young, only having been organized since 1875. It holds annual meetings; issues volumes of proceedings; has no State aid and occupies no place in the State House. Its work, as yet, is confined to the dissemination of information through the annual meetings for discussion. The Secretary, Mr. E. Williams, of Montclair, is a practical horticulturist of reputation, and in the proceedings of the society such men as Dr. Thurber, P. T. Quinn, and Wm. Parry, noted everywhere in the United States for their practical knowledge of horticulture, figure quite largely.

PENNSYLVANIA FRUIT-GROWER'S SOCIETY.

We cannot better describe this society and its work than by quoting the whole of Secretary E. B. Engle's letter.

MARIETTA, PA., Jan. 1st, 1880.

DEAR SIR:—Your circular of inquiries received, and I take pleasure in responding as fully as time and knowledge will permit.

1st, Society name. "Pennsylvania Fruit Grower's Society." As originally organized it was entitled "The Fruit Grower's Society of Eastern Pennsylvania," but its work not being, or not intending to be, confined to the eastern section of our State, the word Eastern was dropped some 15 years ago.

2d, How controlled? By a board of officers consisting of a President, 3 Vice Presidents, a Recording Secretary, a Corresponding Secretary, and a Treasurer, who are elected annually by the Society. We have also annual standing committees which are appointed by the President, and which in a great measure assist in the Society's labors. Chief among these is the General Fruit Committee, which consists of one member from every county in the State represented in the Society, each member having the power to appoint two assistants in his own county. The following extract from Article 2d of our "By-Laws," will best convey to you an idea of the duties of this committee:

"The General Fruit Committee shall carefully and thoroughly investigate the subject of fruit culture in general. Each local committee of three shall collect such useful and interesting information in relation to the subject as may be in their power, and embody the same in monthly reports, to be made to the general chairman; such reports to be by him examined and embodied in his annual or semi-annual reports."

3d, State aid. Our Society has no direct aid from the State. Since 1870, the State has printed free our annual reports, and since 1878, an annual appropriation of \$130 is allowed for compiling and preparing the same for publication.

4th, Method of work. We hold annual meetings in different sections of the State, in January of each year, where questions relating to Horticulture, Floriculture, Fruit-growing and kindred topics are discussed. Usually papers are prepared or addresses made on assigned subjects. Questions are proposed for discussion, and members give their views on new fruits and general horticultural matters of interest. Standing committees are appointed for work in the interim, and are expected to submit their reports at the annual meetings.

5th, Special work on hand. No special work on hand; none further than to labor earnestly and zealously for the advancement of general horticultural taste and knowledge throughout the State.

6th, Membership. We have honorary members, about 20 life members, and an annual membership ranging from about fifty to one hundred. Fee for annual membership, \$1.00; life membership, \$10.00.

7th, Rooms at the capitol. We have no rooms at the Capitol, nor a general head quarters anywhere; we go from place to place, holding our annual meetings where we have best prospects of doing good, acquiring information, and increasing our membership.

8th, How long organized? The Society was formally organized February 1st, 1860, though the formation of a State Pomological Society was discussed as early as 1852, at a meeting of the Pennsylvania Agricultural Society.

9th, How appreciated? I approach this question with considerable reluctance, because it is one concerning which, individual members of our Society may differ. At best I can but give my individual opinion, with a few reasons for the same. Our work seems to be appreciated where we are known, where our aims and purposes are understood, and where our citizens are directly interested in fruit-growing and horticultural pursuits; but our membership has never been sufficiently diffused throughout the length and breadth of our State to obtain that general appreciation which we deserve. We have in Pennsylvania such diversified industries, some of which are of such great magnitude compared with fruit culture, that we can never expect to become a fruit-growing and exporting State like your own. Coal, iron, lumber, and oil, are our great staples, and with mixed agricultural pursuits, absorb the great bulk of the wealth and business energy of our citizens. In many portions fruit-growing will always be considered secondary and uncertain fields for the venture of capital. There are few large commercial orchards here, and comparatively few of our people who depend exclusively upon horticulture for a livelihood. With most of us it is a secondary calling, and occupies only so much of our time and attention, as is not absolutely necessary in other pursuits. As a State, we seldom grow sufficient fruit for home consumption, though we have soil, location and climate adapted to every variety of fruit and every method of culture, and we need only to properly understand our resources and advantages to grow eventually within our own borders, all and more than we need. Our Society aims to ascertain and advise what fruits are best adapted to the wants of our entire State, and what are best in certain localities; it solicits the attendance and experience of fruit-growers from every section of the state; it meets statedly to acquire, as well as to impart, all the fruit lore it possibly can; and if in its effort it is not appreciated as it should be, we must attribute it to that feeling of indifference that ever pervades the human mind, when it does not realize that its own interests are directly involved.

Yet, in reply to your 10th inquiry, as to the present condition of our Society, I would say it is decidedly healthy and encouraging. We are gradually, not only in our own, but in other States, widening the circle of our acquaintance and consequently our usefulness. We are annually striving to enlarge the scope of our labors by discussing a wider range of topics; we are preaching the gospel of good fruits, and beautiful flowers, attractive homes, and thorough intelligent culture, and we feel that we are achieving success because we deserve it.

Very respectfully yours,

E. B. ENGLE.

Sec'y Pennsylvania Fruit-Grower's Society.

To CHAS. W. GARFIELD,

Sec'y Michigan Pomological Society.

IOWA STATE HORTICULTURAL SOCIETY.

From Secretary J. L. Budd, and the last volume of Transactions, the following information has been gathered:

The Society has been organized thirteen years, and is governed by a board of twelve directors, who are chosen from twelve districts into which the State is divided.

The Society has seven standing committees, aggregating fifty-seven members; these committee men are well distributed over the State, and the work so subdivided that it is not necessary for most of the investigations, that there be consultation. For instance, there is a committee on Nursery Management which consists of seven members. One member takes the subject of "Seedlings and Stocks;" a second, "Fruits and Shrubs from Cuttings;" a third, "Propagation of Plum and Cherry;" a fourth, "Propagation of the Apple;" a fifth, "Hybridizing and Crossing Fruit;" two others, "Root Grafting versus Top Grafting." By this method there are a good many people working earnestly toward the carrying on of the Society work.

This Society receives \$1,000 per year from the State, under the restriction that two hundred dollars shall be expended in the interests of Forestry.

The special work on hand now, seems to be the securing and testing of hardy varieties of fruit from the north of Europe and Asia in the hope of getting something that will stand the severe climate, and be worthy of cultivation because of valuable qualities.

This association has no life members. Its work is so far appreciated that the demand for its Transactions cannot be met; and at present the condition of the society is very united and harmonious.

INDIANA HORTICULTURAL SOCIETY.

Secretary Ragan of the Indiana Society, responded very promptly and fully, to the list of inquiries, and his letter is inserted in full, as representing the work of his society:

CLAYTON, IND., *December 10, 1879.*

Chas. W. Garfield, Sec'y Mich. Pomological Society, Grand Rapids, Mich.

DEAR SIR,—Although very busy, as you must know, it being just on the eve of our annual meeting, I attempt an answer, as best I can, to your list of questions just received.

1. The full title of our organization is "Indiana Horticultural Society."

2. It is under the control of the usual executive officers—President, Vice President from each congressional district (13), Secretary, Treasurer, and Executive Committee of three members.

3. Since 1866, the State has done our publishing. In 1873, the Legislature appropriated \$500 per annum for that and the following years; and in 1875,

it was reduced to \$300, which we have since received, though this is subject to be cut off by any session of the Legislature.

4. We hold but one regular meeting per annum, though called meetings are often had. Our discussions are free to all without reference to membership, and take a very wide range, embracing subjects in the remotest degree affecting the interests of horticulture. A synopsis of these discussions is reported for publication, together with addresses, essays, reports, etc., read before the meetings, which are published annually in book form, for distribution to members who pay an annual fee of one dollar, and to such others as may be deemed entitled to them. The Society has at all times pursued the most liberal policy in the distribution of its reports, the sole object of the organization being to promote and encourage an interest in horticultural topics amongst the people of the State.

5. Our work is general, though we are especially interested in knowing how to successfully combat the rapidly increasing insect pests. But we are groping in the dark. We look with interest to the sciences of entomology and ornithology for a gleam of hope.

6. Our membership ranges from fifty to one hundred, though our friends and well wishers, who anxiously solicit our published reports, and who often compliment us on the noble work we are accomplishing may be numbered by the thousands.

7. For the last two years we have enjoyed the use of a small room in one of the State buildings in which we are collecting a cabinet and library. The plans of the new State Capitol, now in course of erection, embrace appropriate rooms for the use of the society.

8. In 1842 an Indiana Horticultural Society was organized, surviving some three or four years. In 1860 the Indiana Pomological (now horticultural) Society was organized. It was regularly incorporated under a State law in 1875.

9. We think our labors are appreciated, and as confirmatory evidence of this fact, I submit as part of my answer to this question, the following editorial, clipped from the columns of the *Indiana Farmer* of Dec. 6th:

The annual meeting of the State Horticultural Society is an event of more importance than is generally supposed. The attendance is not usually large, nor are the members who meet from year to year the most wealthy and distinguished of our citizens, nor are their transactions regarded with great consideration by our Legislature; on the contrary the appropriations which this body grant the society have been few and small. But yet the work it is accomplishing is important and of increasing value. It affects the health and prosperity of the people of the State in a greater degree than any of us imagine. The annual reports of proceedings sent out by the society present the methods and results of our best and most experienced fruit-growers, and give lists of trees of the different kinds of fruit, that experience has proved to be best adapted to our climate and soil; and better perhaps than all beside, they keep alive among our farmers an interest in fruit culture. It is one of the strange and unaccountable facts in farm life that the farmer, who of all men, most needs and enjoys good fruit, and is at the same time best situated for having it abundantly and cheaply, pays almost no attention to its cultivation. At some time in his life he plants an apple orchard, but perhaps with little knowledge or care as to the varieties selected, and it is an exceptional case where he prunes and cultivates, or pays anything like the attention to it

that he does to other crops. If the trees grow and do well, he is thankful, but if they do not, he does not put himself to any trouble about it, but allows the fact to conform with an idea he has always entertained, that fruit don't pay anyhow. As to pears and the choicer small fruits and berries, scarcely one in ten of our farmers ever make even an attempt at cultivating them. If all our farmers raised as much fruit as they should and of as fine varieties as they might, the surplus that would be sold would add many hundreds of thousands of dollars to our wealth every year, and would increase the health and happiness of the people in an untold degree. Our State Horticultural Society is laboring towards this most desirable consummation. Its members are not a set of jealous fellows who want to keep all the information in regard to the best fruits and best means of cultivating them to themselves, for their own advantage. The doors of their meetings are open to all comers, and all are welcome to take part in the discussions and learn all they desire. Slowly and surely the influence from these enthusiastic but practical men is extending among the people, and more and better orchards and fruit gardens are being planted as a result of their annual conferences. They deserve the encouragement and thanks of all good citizens for their persistent efforts to foster and advance the noble and valued art of horticulture.

10. Our society suffered quite largely in a falling off of membership during the recent financial troubles through which our country has passed, though very perceptibly recuperating therefrom at this time. One of our greatest sources of regret and of apprehension is due to the great absence of interest upon the part of young men and ladies. We feel, however, that in adopting the present migratory system of holding our meetings at different points in the State, that we are on the high way to overcome this difficulty, as the ladies are already manifesting much interest in our meetings (not a few are regular attendants, and some are good working members), and where they go the young men are sure to follow.

Very respectfully,
W. H. RAGAN,
Secretary Indiana Horticultural Society.

ILLINOIS STATE HORTICULTURAL SOCIETY.

A brief letter from Secretary O. B. Galusha, with a volume of Transactions which accompanied it, is the source of the following information concerning the Illinois society:

The State is divided into three districts, Northern, Central, and Southern, and each district has its local society, and furnishes two members for the Executive Board which governs the State society. The remaining members of this Board are the President and Secretary.

The State is also divided into seven districts, two of which belong to the Northern society, two to the Central, and three to the Southern. Each district furnishes one member to a General Committee on Horticulture.

Aside from this committee, there are seventeen standing committees on various departments of work, including, aside from the various divisions of Horticulture, Entomology, Ornithology, Botany and Meteorology.

Prof. S. A. Forbes, who is chairman of the committee on Ornithology, is doing a great work and the one in which, perhaps, this society is most interested at present. Mr. Galusha in speaking of it says:

"The work of Prof. Forbes—see chart—has been continued and is to be continued until the value or detriment of birds of all species in the State is determined. It is the most thorough work in this direction ever done in America if not in the world."

The work consists in making careful personal examinations of all the birds that frequent the State, and classifying the food of the various species and families. The chart, referred to above by Mr. Galusha, is an epitome of this work, and shows that 277 specimens have been examined, covering nearly a hundred distinct species.

The society was first organized in 1857, and by enactment of the Legislature reorganized in 1874.

An annual appropriation of \$1,500 by the State is made to the society. The annual membership is about one hundred; aside from this there are life and honorary members. One feature of the constitution is that all wives of members are members of the society without fee. The life membership fee is twenty dollars, and the annual fee one dollar.

The society is now in fine working condition, and pervaded by a spirit of enthusiasm and earnestness.

MINNESOTA STATE HORTICULTURAL SOCIETY.

We are indebted to Secretary Charles Y. Lacy for a copy of the Transactions of this society, together with a letter of answers to our inquiries from which the following is gleaned.

The society was organized in 1866 and holds annual meetings for discussions, gathering and disseminating information. An executive committee elected annually look after the business interests of the society, and the State appropriates \$500 annually to cover the cost of printing the Transactions.

The special work accomplishing now by the society is the collection of accurate horticultural statistics from all parts of the State.

The membership varies, but averages not far from sixty.

The Society is now accomplishing a steady, earnest work, and although there is not a high pitch of enthusiasm exhibited in the reports of its meetings, still it is gaining ground and developing an interest in "the art which does mend nature." Like other western societies, this one is controlled and rendered useful by men who are engaged in business every day, and take a little time with the association as a sort of relaxation from other duties. There are no men of leisure who can devote themselves exclusively to the interests of horticulture.

OHIO STATE HORTICULTURAL SOCIETY.

Secretary M. B. Bateham of the Ohio Society is known everywhere as an indefatigable worker, and this Society does well to continue him so long in a place where his work is rendered so effective.

In answer to our queries, Mr. Bateham says:

You have had our reports regularly, and understand pretty well what kind of workers we horticulturists of Ohio are.

We receive \$500 annually from the State to pay for our running expenses. Our aim and work, you well see, are to reach and benefit the people; awaken interest in horticultural improvement; in embellishing country homes; in planting and eating good fruit; all this aside from the promotion of fruit culture as a commercial pursuit.

Our membership varies from 150 to 200 annually. We have no central abiding place, but roam around the country stopping for a little while where we think we can do the most good and gather the most information. We hold no fair except as we individually contribute to the State Fair, our working members managing the fruit department of that Fair. We have exhibitions of fruits at our annual meetings which we endeavor to make instructive.

Our Society has been organized thirty years. A little over half that time as the "Ohio Pomological Society," then changed to our present name.

Our work is gradually gaining in favor with the people and our promises for the future are good.

We have six or eight county societies as auxiliaries, and these are doing good work. We aim to encourage these organizations.

The following quotation from my circular of last January, will give you an idea of our special work and the way in which we try to encourage county societies:

It is desired that members of the Society shall make special efforts to learn more facts about the cause and prevention of grape rot—test the various methods that are suggested in the report and in other publications, and see if they are of practical utility. Also watch for the appearance of pear blight, noting all the facts, and remember, if you can, whether the leaves fell from the trees prematurely last season; see also whether the wood appears discolored when cut, from the effects of the present winter. Try the effects of *mulching* annually the surface of pear and plum orchards and vineyards. Try the band method of trapping codling moths, and see if the expense and labor is too great for advantage in orchards where hogs cannot be kept—also whether it will pay better than hogs or sheep in large orchards. This season and the next, try experiments to find out whether there is any practicable way of lessening the tendency of apple trees to bear fruit only in alternate years. Come to the next Annual Meeting prepared to contribute something to the general stock of knowledge on these important and unsettled problems.

Remember there is a meeting of the Society each year on Wednesday evening of the week of the State Fair, which will be September 10, but the place of the fair has not yet been determined. The question where the next Annual

Meeting of the Society shall be held will then be considered, and invitations will be in order. Somewhere in the northern or eastern half of the State will have a preference.

Officers of county Horticultural Societies are reminded that the rule is continued by which two or more of the officers or committee of the State Society will endeavor to attend one meeting during the season of each county society, when invited; but in order to avoid other engagements, it is important that such invitations should be given at least a month before the time. It is also a good plan to invite the officers of neighboring county societies to attend such meetings in a friendly way. Much pleasure and instruction are often derived from these exchanges of hospitality.

Truly yours,

M. B. BATEHAM,

Secretary.

KANSAS STATE HORTICULTURAL SOCIETY.

The State which provides best for its Horticultural Society is Kansas. The annual appropriation of \$2,500 provides well for the prosecution of its enterprises and the publication of its transactions. This Society convenes twice a year and is governed by officers of its own election annually.

We are indebted to Secretary G. C. Brackett, who kindly replied to the letter of inquiries for information concerning this society. He seems very enthusiastic, and no doubt the society is doing a very excellent work for the State. We quote his replies to the questions as they occurred in the circular:

Our plan is to work through standing committees elected annually, a vice president in each county, district, county and local horticultural societies, and an extensive correspondence.

Our special work now is the production of new varieties of fruits, gathering up all promising accidental seedlings of Kansas origin, for a thorough development of their characters, and if proved valuable, disseminating them among our people.

Our membership list is never extensive for any one year, as it is mostly made up from the citizens of localities, where our annual and semi-annual meetings are held; yet thousands are in spirit members, ever ready to assist us. Our State is almost a unit in our horticultural work.

We have no room in the State house and do not desire at present to have. Our rooms are in every county and every rural home.

We have been organized since December 10th, 1867.

Our work we know is appreciated by the generous support given it by the tax-payers and State officials.

In answer to your question as to what is our present condition, I can say we

are firmly established in the hearts of our people, as worthy of their fostering care.

Yours sincerely,

G. C. BRACKETT,

Secretary.

This closes our letters, and as it was not the purpose to draw inferences and conclusions, but the rather to present the facts for our people to employ in furthering the interests of our own society, we will close this article abruptly, hoping that from the longer experience of other societies, better methods of increasing our own influence may be drawn by the members of the Michigan State Pomological Society.

SECRETARY'S PORTFOLIO.



CHARLES DOWNING.—FROM A LATE PHOTOGRAPH.

Samuel B. Parsons, in the Rural New Yorker of August 16, 1879, gives the following brief biography of Charles Downing, which we are permitted to use in connection with the above accurate portrait:

"Born in 1802, and working with his father among trees and flowers until twenty years of age he then succeeded him and commenced that series of experiments with fruits, which makes him now the most trustworthy pomologist in America. From 1836 to 1838 he was in partnership with his brother who afterward commenced his literary work and filled the niche which was then open. A. J. Downing held a spirited and graphic pen and his breezy articles, when editor of the Horticulturist, were the natural outgrowth of his taste and love for horticulture. In the preparation of his book of fruits, however, he was much indebted to his brother Charles, whose long experience gave him accurate knowledge, and who had fruited and compared many thousand varieties. After the death of A. J. Downing this book passed through several editions, each greatly enlarged by Chas. Downing until the present edition is the best Pomological book in the world and made so mainly by the labors of the subject of this sketch. It was not until after 1840 that I knew either of them, and while admiring the striking qualities of his brother, I was always impressed with the quiet observation, the great accuracy, and the unobtrusive modesty of Charles Downing. He never sought appreciation, but always received it from those who truly knew him. While writing of his attention to fruits, I should not forget his love for ornamental plants and his knowledge of them. His old place was much changed in 1868 by the running of streets and the destruction of many of his trees. He still indulges his taste, however, and his memory does not fail him. Any one desiring information on fruits can rely upon its correctness, if received from Charles Downing. When thinking of the usefulness of such a life, one cannot help wishing for the old days of Methuselah when man's life was not limited to fourscore years.

"In the career of the two brothers is a valuable lesson. One gave his life to save life—the other has spent his years in labor for men. Sacrifice and labor are two pivots on which the moral world revolves. Happy is the man who has his share of each."

THE SECRETARY'S PORTFOLIO.

INTRODUCTORY.

It has been a question with me sometimes whether the compilation of the Portfolio should be continued, and become a distinguishing feature of the Michigan Pomological Reports. To me, personally, this collection of choice horticultural literature is exceedingly valuable as a matter of reference; and to ascertain if it was equally appreciated by others whose opinions I have every reason to respect, a system of careful inquiries was instituted during 1879 after the issue of the last volume. The testimony was unanimous; everybody seemed to want the Portfolio continued. In many cases, prominent fruit growers have stated that they could not afford to take but one or two horticultural papers, and found it impossible to get out so as to meet prominent horticulturists, but when they desired a substitute for these privileges, they found a satisfactory one in the Secretary's Portfolio of the Michigan Pomological Report.

It was this testimony that induced me again to undertake to compile in as compact form as possible, the best things said by the best men on horticultural topics during 1879, and place them in such an arrangement as to be readily found by those who use this volume.

I may be pardoned for repeating the language employed in the prefatory note of last year's Portfolio, as it expresses just what I would say to-day. In the form of this Portfolio are placed the best things that are said during the year upon topics connected with the various branches of horticulture, by the most careful students of the art, and many of these facts have never been in print at all, having been gathered in conversation, or clipped from private letters sent to my office during the year. However, I am largely indebted to the press for the principal part of the matter. It has been the aim, in the selection and compilation, to give credit wherever due. Errors may have crept in, but I trust these will be overlooked in consideration of the object in view. I need not mention here the publications to which I am indebted for excellent material, because their names appear in connection with the good things taken. I am, however, especially indebted to the Detroit Free Press

for the free use of a number of valuable exchanges, and to the Rural New Yorker for the cut of Mr. Charles Downing, which I have chosen as the frontispiece of this department.

I am constantly reminded in the preparation of this Portfolio of the fact that the Michigan State Pomological Society is not without numbers of warm friends.

For purposes of reference and general convenience, I present the following analysis of the contents of the Portfolio:

A—POMOLOGY.

1. Scientific and experimental.
2. The nursery.
3. Apples.
4. Pears.
5. Peaches.
6. Grapes.
7. Berries.
8. Quinces.
9. Planting and transplanting.
10. Pruning.
11. Mulching and cultivation.
12. Fertilizers.
13. Marketing and preserving.
14. Eating fruit.
15. Birds.
16. Insects and diseases.

B—FLORICULTURE.

1. Flowers out of doors.
2. Plants in the house.
3. Cut flowers.

C—LANDSCAPE GARDENING AND ARBORICULTURE.

1. Landscape gardening.
2. Ornamental planting.
3. Ornamenting school grounds.
4. Evergreens.
5. Hedges.
6. Forestry.

D—THE GARDEN.

1. Hotbeds.
2. Vegetables.

E—MISCELLANEOUS.

1. Fairs.
2. Locality reports.

SCIENCE IN HORTICULTURE.

OBJECT OF SEX IN FLOWERS.

At the meeting of the American Pomological Society in Rochester, Mr. Thomas Meehan gave an address on the object of sex in flowers, and the Editor of the Rural Home made the following abstract of his remarks:

He commenced by relating the story to be found in old spelling books, of a philosopher who claimed that everything was originally made wrong. Reclining under a stately oak he said: "Now, this great tree with strong branches grows only small acorns, while the feeble vine bears pumpkins; now, if I had made things I would have had the acorns on the vines and the pumpkins on the oak." While he was yet speaking an acorn dropped upon his forehead, and reflecting upon what the consequences might have been had it been a pumpkin in its place, he concluded that things are better as they are.

We are not much wiser than this philosopher. We see a great deal of apparent waste in nature, but as we grow wiser we shall recognize that everything is created in wisdom. In a tuft of chestnut blossom there are about five catkins, and each catkin contains about 500 flowers, and these 2,500 flowers are all males, and all *seem* produced to fertilize two or three chestnuts on the end of the branch. But they cannot fertilize those chestnuts, because they fall before the pistillate flowers open. Some have endeavored to account for this superabundance of male flowers by supposing that the wind wafts the pollen to distant trees which are more forward, and thus cross-fertilization is promoted; but the speaker questioned the truth of the theory. Others had claimed that fragrance and brilliancy of color are given flowers to attract insects, and thus cause cross-fertilization. But some fruits have very odorous flowers,—*Rubus strigosus* for instance,—and are very shy bearers, while the American Black-Cap which has scarcely perceptible petals, and little odor, is remarkably productive.

The object of sex in flowers, the speaker contended, is not primarily, to perpetuate the individual. Many species of plants and some of the lower orders of animals—may be reproduced by buds, cuttings, offsets, bulbs, tubers, and cells. Mushrooms, for instance, increase by multiplication of cells underground, or artichokes have propagated by tubers for centuries, without change, and the Red Dutch currant by cuttings. So we perceive that nature can reproduce the individual by division without using the seed. Suppose we were to propagate the higher orders in the same way by division. One Smith would divide and make two Smiths, or any number of Smiths exactly like the original in every essential, and there would be an unvarying uniformity. But when we propagate from seeds, there is a cross-fertilization of flowers of different varieties and species, and thus we have variation in nature. Thus we see that the primary object of sex in flowers is not to perpetuate the individual, but to produce variation, increase varieties.

Thus we have a clue to many things otherwise unaccountable. Thomas Knight believed that varieties would wear out, and a great many others have taught the same doctrine. When varieties wear out, it is the existence of unfavorable conditions. Orchards are supposed by some, to be barren some seasons, because insects are scarce. Apples bear alternate years, but not from agency of insects. Manuring will remove barrenness.

The origination of new varieties through cross-fertilization of flowers is a matter of great importance. We should understand those laws bearing on variation. Some species are naturally fertile and others infertile. The former are difficult to change by cross-fertilization, while the latter change quite freely. The most fruitful varieties are changed least by fertilization.

ROOTS AND TUBERS.

It is very common to use the terms root and tuber indiscriminately, and in such a way oftentimes that they are misnomers. The Rural New Yorker explains the meaning of the terms so clearly that there need be no mistake made hereafter by those who read the following:

A potato is a *tuber*; so is an artichoke. A sweet potato is not a tuber. Neither is a Dahlia nor a Pæony. A tuber is an underground branch or thickened rootstock. The so-called eyes of potatoes are really buds, as much

as those which occur in the axils of the leaves of stems above ground, and the rudimentary leaves beneath may be seen in the form of little scales. Sweet potatoes, Dahlias, Pæonies, etc., are swollen roots, though the sweet potato does produce buds, particularly at the upper end, and it is for this reason that it has been mistaken for a tuber. He who will take the pains to examine the underground growth of each will see that the difference is very marked. Often the roots of sweet potatoes swell to the size of one's little finger, and so remain, while, beyond, another swelling upon the same root may so enlarge as to make a potato fit for eating. The Irish potato forms at the end of the stem, and forms no fibrous roots of its own. The eyes may be compared to the nodes or joints of the rootstocks of the well-known couch, or quick-grass (*Triticum repens*), so troublesome to farmers all over the country, each one of which will grow more quickly for being detached from the rest of the stem. Beets, turnips, carrots and parsnips are roots. The seed is planted one season and an accumulation of nutrition is stored in the root which, if planted again, produces flowers, fruit and seeds while it is itself consumed.

STOCK AND GRAFT.

Mr. S. B. Peck of Muskegon, believes there must be something wrong in the propagation of nursery stock; he intimates that the fault may lie in the want of care in the selection of seeds from which to grow seedlings to graft upon. He gives a bit of his experience:

"I bought and planted five Wagener's at the same time, and treated them in every way alike, yet one fruited three years before the rest. Of two Talmán's Sweets, also, planted two rods apart in 1862, treated in precisely the same way and looking to-day almost exactly alike, one has borne six to ten times as much fruit as the other. Two other trees, on the same acre, of like age, soil and culture (American Golden Russet and Red Astrachan), always bear full crops biennially, while some others, seventeen years planted, have never shown a blossom. Others—and some of them covering an area of twenty feet in diameter—have not borne enough to identify their variety, not enough to satisfy the cravings of the early crop of codling-moth larvæ. All the above, except the Wageners, are on one acre of level, uniform soil, planted at the same time (1862), and always treated alike. About two-thirds of them succumbed to the hard winter of 1874, the rest now appear healthy. Others planted near by in 1864 and 1865 from the same nursery (which, I think, is now extinct), have behaved in about the same way, while seedlings from seeds planted about 1864 and replanted at the proper age, have borne every other year all I could expect.

I do not claim to be able to say how trees should be raised in the nursery, to insure the best results to the orchardist, but I feel sure that there are faults in their propagation somewhere. If we plant a seedling tree, we have confidence that, with proper culture, it will at a proper age blossom and bear fruit. In my boyhood, say from 1810 to 1820, my principal fall labor was gathering apples and making cider. Our trees were all natural fruit, and seldom any two trees bore fruit alike. There were great differences in the bearing qualities of the trees; many of them bore profusely, but I think we never had a barren tree of proper bearing age.

I write in the hope that the science and perseverance that have quintupled the productiveness of the strawberry and the size of its fruit, tripled the quantity of corn per acre, given us luscious fruits, instead of the crabbed, acrid ones which nature once provided, may, by the application of profound study, experiment, and persevering industry, yet produce fruit trees that the orchardist, by giving them judicious care, can rely upon for productiveness and the possession of that peculiar flavor and aroma which belonged originally to the variety. That such trees cannot be raised for the paltry prices now obtained, I am well aware: and that purchasers and fruit-growers must be more liberal in the prices they will pay, is also certain, if they would have evidence of greater perfection in the trees purchased.

The advantage of the selection of perfect seed from which to breed, is becoming every year more apparent. We have examples of it in the two farm products, corn and potatoes. Every good farmer selects for the former his best ears, and to this cause I impute the great increase in product, while it is quite common to plant of the latter what has been discarded for the table, and instead of 200 to 400 bushels of sixty years ago, we now average less than 100.

ANOTHER UPON THE SAME.

Dr. T. H. Hoskins of Vermont, upon the same subject, gives several examples of the influence of stock on the graft, and concludes as follows concerning the propagation of nursery trees:

Experience has slowly led me to the belief that the less of the stock there is to a grafted tree, the better. Consequently I would always practice root-grafting, and set the grafts deep enough to encourage the development of roots from the cion. Not all kinds will strike root freely under such circumstances, but those which do, make the best trees and bear fruit truest to their original. Examination has shown me, in many instances, that when two-inch roots are used, with six or seven-inch cions, set so that only one or two buds are above ground, the "nurse-root" hardly survives the first season; or, if it does, it furnishes but a very small fraction of the root-system of the tree. I was very much prejudiced against this method of propagation, and have in fact denounced it savagely in years past, but I must now confess that trees grown in that way, to prove its badness, are among the best in my orchard.

BARK BURSTING OF NURSERY TREES.

Prof. Budd, of the Iowa Agricultural College, has this to say in relation to the very common trouble of bark bursting near the crown of nursery trees:

This bark bursting of young trees, with a large proportion of newly formed cell structure in their trunks, may occur at any time from the middle of September to the middle of March, when the conditions are present as to sudden accession of moisture after a season of deprivation of water by drought, or severe freezing. In this special case, the severe drought of August and first half of September was followed by sudden flooding of the tissues with water during the copious rains in that section the last of September.

We have long believed that sudden supply of water, after a period of unusual deprivation, had something to do with the rupture of nursery trees and also

with the bursting of such fruits as the tomato, grape, cherry, etc. Prof. Bessey informs us that the researches of German biologists shed much light on the exact manner in which the injury occurs.

The protoplasm of newly-formed cells is in some respects like glycerine in its capacity for absorption of water. In its sudden imbibition, as the Germans express it, of water, after a season of scant supply, an actual swelling of the tissues takes place somewhat like the swelling of a sponge as it absorbs water. The sudden imbibition of large amounts of moisture through the bark near the earth's surface, added to the liberal supply from the roots consequent upon copious rains after a season of drought, or in winter after a season of severe freezing followed by melting snows, may cause the tissues near the ground to become so enlarged as to rupture the inelastic bark.

Varieties seem to vary in capacity for absorbing water through the bark at the earth's surface. For instance, the Warfield, notorious for bursting, will retain a moist, and even wet, bark for three or four inches above the ground, apparently by capillary attraction, during a dry, sunny day, when the bark of a Duchess at this point will be perfectly dry.

OLD SEED AND VINES.

At a meeting of the Botanical Society of France, M. Duchartre called attention to a statement of M. Cazzuola in the Bulletin of the Tuscan Horticultural Society in 1877, to the effect that melons raised from fresh seed bear a large proportion of male flowers and very few female flowers, while on the other hand, seedlings raised from old seed bear many more female flowers than male. The statement was confirmed by M. Millet, a French grower. We, years ago, stated this fact as well known among practical gardeners, and also the fact that seeds from five to eight years old, if well kept, would produce less vine, and earlier fruitage, an important point with plants that run strongly to vines. The rule will apply not only to melons but also to cucumbers and squashes. Seeds of the cucumbers and melon family retain their vitality for ten years, and we know not how much longer.

CARNIVOROUS PLANTS.

A correspondent of the London Garden, who confesses himself to be a disciple of Darwin, thinks there is a good deal of speculation, not much entitled to the name of science, connected with Darwin's ideas on plants feeding on insects. This correspondent has himself had some of his fine pitcher plants badly injured by the insects caught by them. Some of the insects cause the plant to decay where they lie, and this decay spreads and kills the leaf, showing the poisonous effect of the decaying flies on the sensitive surface of the leaf. The writer adds:—"For my own part I never could see anything more remarkable in a plant absorbing animal matter by one surface than another,—by the stem than the root. The feeble, illogical writings on insect-eating plants are certainly no gain to knowledge." The simple truth is that Darwin in this and in other positions, first erected a theory and then hunted

facts to support it, in which he was certainly very industrious; but it would have been better and more in accordance with the deductions of true science, to have framed his theories after he had obtained and arranged his facts.

JOHN J. THOMAS.

TREES AND MIASMA.

So much has been said within the last few years of the value of the eucalyptus, or Australian gum-tree, in destroying or neutralizing the miasma of malarial districts, that it would be well that experiments be made with various plants for this purpose, especially those having large, and particularly those having downy leaves, as well. The common sunflower is well known for its so-called value in preventing the bad effects of miasma. There are undoubtedly many others as good, and that may as easily be grown. Marshy lands are harmless if the vegetation in decaying does not give off putrescent gases, for mere moisture is not unhealthy. Hence marshes become pestiferous if accumulations of vegetable matter exist, which, under the effects of sufficient heat and moisture, give off putrefying matter. In the North marshes are not deadly for the reason that the summer heat is not sufficient, as a rule, to produce putrid fermentation to a degree sufficient to produce any but the lighter forms of malarial diseases.

The business of plants is to pump up and utilize those noxious matters, and utilize them in their structure, while at the same time they give off oxygen by their leaves. Hence marshes which abound in a variety of plants are not usually deadly. The most noxious are those which dry up in the summer and leave the mud exposed to the action of the sun. Hence the most potent means of obviating its effects is to plant the margins with some broad-leaved trees, and preferably those that are pubescent or downy, as the basswood. We have before this advised the planting of sunflowers in miasmatic neighborhoods, and hope to see it acted on the coming season. We also hope that those who do so will make the results public.—*Prairie Farmer*.

DISPERSAL OF SEEDS.

The thistle, the dandelion, and the cotton bush provide their seeds with long tufts of light hair, thin and airy as gossamer, by which they are carried on the wind to bare spaces, away from the shadow of their mother plant, where they may root themselves successfully in the vacant soil. The maple, the ash and the pine, supply their embryos with flattened wings, which serve them in like manner not less effectually. Both these we may classify as wind-dispersed seeds. A second set of plants have seed-vessels which burst open explosively when ripe, and scatter their contents to a considerable distance. The balsam forms the commonest example in our European gardens; but a well known tropical tree, the sand-box, displays the same peculiarity in a form which is almost alarming, as its hard, dry capsules fly apart with the report of a pistol, and drive out the disk-shaped nuts within, so forcibly as to make a blow on the cheek decidedly unpleasant. These we may designate as self-dispersed seeds. Yet a third class may be conveniently described as animal-dispersed,

divisible once more into two sub-classes, the involuntary and voluntarily aided. Of the former kind, we have examples in those seeds which, like burs and cleavers, are covered with little hooks, by which they attach themselves to the fur or wool of passers by. The latter, or voluntarily-aided sort, are exemplified in fruits proper, the subject of our present investigation, such as apples, plums, peaches, cherries, haws, and bramble berries. Every one of these plants is provided with hard and indigestible seeds, coated or surrounded by a soft, sweet, pulpy, perfumed, bright colored, and nutritious covering known as fruit.

By all these means the plant allures birds or mammals to swallow and disperse its undigested seed, giving in as it were the pulpy covering as a reward to the animal for the service thus conferred.—*Popular Science Monthly*.

THE NURSERY.

WORKING OVER TREES.

It might be of interest to some of the readers of the Monthly for me to describe a method of working over some Flemish Beauty pear trees, upon which the fruit cracked so badly as to render them worthless. Last summer, in the budding season, I budded all over the trees into all the limbs which I thought would form a perfect head. The buds all "took," and the present season have grown remarkably. To be sure this is no new discovery, but many fruit growers think that there is no way to work over a large tree except by the old-fashioned mode of cleft-grafting, and which often produces unseemly gashes upon the tree, and which it often takes a number of years for the tree to overcome. Hence I speak of this method of budding into the limb, and I think it may be of service to some, who like me are troubled with several worthless varieties of the pear that are rendered so by cracking.—*J. M. H. in Gardner's Monthly*.

BUDDING.

Charles A. Green, a nurseryman of Clifton, New York, speaks thus sensibly upon some matters in connection with budding stocks:

All trimming of the stock should be deferred until the day of budding, as every leaf taken from a plant or tree lessens the growth. Many labor under the delusion that by removing the shoots from the trunks of their young orchard trees while in leaf they are hastening their growth. Bands for budding are secured by removing the bark of basswood in June or July and soaking it in water until the inner bark peels off in thin ribbons. The pear in this section is budded in July, as the leaf-blight usually attacks it soon after, stopping all growth, rendering budding impossible. After the pear, we bud the

plum, then the cherry, following with the apple, and closing with the peach from the 10th to the last of September. Though much depends upon the season, I have found that early budding generally succeeds the best, but more attention is required to prevent the cutting of the rapidly expanding stock by the band that holds the bud. Peaches budded early last September nearly all succeeded. Of those budded the last of the month only two-thirds survived. Those budded early in October failed almost entirely.

While a certain maturity of bud is desirable, I think that immaturity is seldom the cause of failure. Apple buds must be set before they have become very prominent, or the season will be passed. I have budded the peach successfully when the buds set could scarcely be discovered with the naked eye. Pear buds are the only ones I recall as having fully matured before setting. I have inserted buds inverted without success. Top budding is often practised—the bud is inserted where the head of the tree is desired, and may be accomplished in very large stock; say thrifty trees three or four years old. Our cherries budded last season were infested with lice which stopped all growth in the ground shoots. Paris green and water—twelve quarts of one to a teaspoonful of the other—destroyed the lice, but seemed to injure the leaf somewhat.

TREE AGENTS AGAIN.

This time the fellow who called to sell us trees had a nice sample of cherries, "a new variety, dark rich color, excellent flavor, good bearer, extremely hardy. The best cherry ever known for canning purposes." That is the way the agent put it to us and we meekly asked to taste the delicious fruit, after which, the following colloquy ensued:

Tree agent—"You are interested in fruit matters and can appreciate this new cherry and I have come some distance to show it to you and to have you interest yourself in its dissemination."

Editor—"Yes; What name did you give it?"

Tree Agent—"Miami Transcendent. It is a rare acquisition in the cherry line. We are selling lots of them at \$1 a piece, which is very cheap for a new cherry."

Editor—"Are you sure that this cherry which I have tasted is the fruit of the variety which you are selling?"

Tree Agent—"I know it; picked the cherries myself, from the original tree that this bud was taken from. There can be no mistake. Aren't they beautiful, and cheap, too? If you want any trees to set out in your own garden I will let you have them at seventy-five cents each. Of course you would be willing to give a little notice of the variety."

Editor—"Yes, sir; I will give a notice of the variety with pleasure. I shall write it thus: 'A tree agent is trying to palm off a new cherry in our State, which he calls Miami Transcendent, at a dollar a tree. There is no such variety grown, and the specimens which he exhibits are fine samples of the old variety known as Black Tartarian, which can be bought at any of our inter-State nurseries for a quarter of a dollar.' I think that will answer the purpose, sir. I make no charges, and as I have other matters to attend to, I will excuse you."

(Exit tree agent.)—*Detroit Free Press.*

TREE SELECTION.

Professor William Saunders, of Washington, commented in a recent address on the delusion many peach-growers are under that the best young trees to select from the nursery row are the straight, smooth, and thrifty looking ones, while experience proves that these are often of too rapid growth and do not turn out so well as those of less promising appearance. In other words: Tall young trees that show great luxuriance have only a few long, wiry roots, whereas stocky, branching growths are associated with a more fibrous system of roots, consequently the latter transplant better and grow away more freely when set in the orchard.

KEEPING GRAFTS THROUGH WINTER.

Nurserymen who cut large quantities of grafts late in autumn, keep them in cellars packed in damp moss; but farmers and others who wish to preserve a few for spring grafting may not have these appliances at hand. For such, a simple and perfect mode is to bury them in a dry place out of doors, in an inverted open box. Fill the box partly full with them, nail two or three strips across to keep them in place, and then place the box in a hole dug for the purpose, with the open side down, and bury them half a foot or so in depth. They do not come in contact with the earth, and remain perfectly clean; and the moisture of the earth keeps them plump and fresh without any danger of their becoming water-soaked. Grafts which have become shriveled by exposure, are thus restored and will grow. It is often advantageous to cut out grafts in autumn, as there is then no danger of their vitality being lessened by exposure to intense cold, and is often more convenient to cut them or procure them from a distance at this time. In marking the labels with a lead pencil, remember that if the wood is wet before writing, the names will last ten times as long as if written dry.

METHODS OF SELLING NURSERY STOCK.

A committee of the American Nurserymen's Association which was given the question of how to sell nursery stock, to report upon at the recent meeting in Cleveland, reported as follows:

We regret that a question of such vital importance, affecting not merely our individual interests, but also widely and materially the public good, must necessarily receive such brief consideration at our hands. We can only regard this as an initial step, which we trust will be followed up by more mature deliberation. We recognize that while our trade is one of the most attractive, stimulating, and we believe, beneficial occupations in which a man can engage, yet it has peculiar difficulties which can only be fully understood by the lessons of experience. The bulk of our business is crowded into the space of a few weeks in a year, and at a season when our own season of planting is most pressing—a fact which is much more true in this country than in England and the old countries. We are also separated, in most cases, by wide distances from our customers, and consequently experience not only the evils of delay in

transportation, but also of ignorance of local wants and demands. Hence we think that any action looking toward a systematic shaping of the course of this trade, and equalizing the distribution of stock, thus helping to make the demand and supply equal, will result in great benefit not only to members, but also to the public. No one can dispute the wisdom of bringing producer and consumer into close relationship. This rule is axiomatic, and it applies with special force to our trade. It is only a wholesome check to human nature that nurserymen should feel a certain responsibility for the future of their stock and be answerable for reasonably good results. And in the purchase of trees, the value of which can only be determined by one or many years of trial, it is wise and right to inspire the purchaser with confidence by a personal knowledge of his sources of supply. We therefore urge upon our brother nurserymen the importance of coming into as close connection with their customers, having personal acquaintance with their wants, and a conscientious purpose to meet them, as may be possible. This is the most legitimate and by far the most economical method of selling trees by the producer to the consumer at first hands. Still it remains true that, owing to the sluggishness of a large portion of the public in buying what they really need, and also owing to the vast space of our country, the necessity for traveling agents to push sales, is felt to be a necessary method. While we deprecate any *special* legislation to prevent the abuse of this method, we do believe there are now, or should be, such general laws as will protect the public from the gross frauds which have been so frequently practiced, and we also believe it is within the province of this association to devise methods to prevent such frauds, and to expose them when found. As expressing the sentiment of this association upon this subject, we recommend the passing of the following resolutions:

Resolved, That carefully prepared statistics of the sources and the amount of stock likely to come upon the market, together with estimates of the probable demand, would tend greatly to equalize prices and also to develop careful culture of specialties in the trade.

Resolved, That we recognize the importance of a high standard of honor and responsibility among nurserymen, not merely in supplying the wants of the public, but also in protecting against all novelties, excepting such as we have reason to believe have intrinsic merit. We do this claiming that with us it is specially true that honesty is the best policy.

Resolved, That among the means of selling stock we cannot at present dispense with traveling agents, who are the efficient means of largely increasing the amount of trees planted, and upon whom we must rely, as is true with all similar professions, for the dissemination of our stock.

Resolved, That while we deplore the tendency to exaggerate and misrepresent, on the part of unscrupulous dealers, yet we can assert with confidence that there are many honorable and entirely reliable dealers who are worthy of confidence, and should have the encouragement of all nurserymen and tree planters.

Resolved, That nurserymen should as far as possible control the grading and labeling of trees when packed upon their own grounds, and use all other available means to do justice to the purchaser and planter.

Resolved, That we recommend all nurserymen to authorize by proper certificate and letter their regular agents or dealers found worthy, and use all proper endeavors to expose dishonest and disreputable swindlers.

Resolved, That the members of this association will use their best endeavors to accomplish the above results.

FUTURE OF THE NURSERY BUSINESS.

Thomas Meehan, at this same meeting of American Nurserymen, took a very hopeful view of the future of the nursery business, but expected to see some changes as indicated in the following summary of his remarks:

He said that it had been stated by parties that the meetings of the association had not generally been of much account, for they only paid attention to business; but that they were glad it was turning its attention more to the discussion of scientific, literary, and other subjects. He thought that to be a great mistake, that the association did not pay enough attention to business. He had read in the recent proceedings of an Iowa horticultural society, the statement of a Western nurseryman that the nursery business was no business; that he had to deal in chickens, pigs, Short-horns, and almost anything in order to eke out an existence. The remark of Mr. Albaugh had attracted his attention, when he had said that the nurserymen of the East had more money than those of the West, which he had urged as an objection to the next meeting being held in an Eastern city. Now, why was this? \$40,000,000 was received annually from the sales of nurserymen and florists, and that was chiefly the actual receipts, and did not include the sales of those indirectly engaged in the business. A business of this magnitude, he thought, was worthy of being conducted in a business-like way. In his own case he had turned his attention to science, was a member of the oldest scientific society in the United States, the American Philosophical Society, founded by Benjamin Franklin, who was its first president; was vice president of the Academy of Natural Science of Philadelphia; and Fellow of the American Association for the advancement of science; besides all this, he was a nurseryman and business man, and he would rather be a business and nurseryman than all of these. The products of the nursery were different from the products of other kinds of business; it required peculiar knowledge to produce from the nursery, and longer to realize from it; therefore the ordinary rules of general business scarcely applied to nursery business. The attempt to find out how much stock there was in market, as a basis of prices was of little value. The better rule should be, to have an idea before raising stock of how much one would almost certainly sell, and to plant more than he would sell, with the idea of burning what might be the surplus. In regard to the future prospects of the nursery trade, his impression was, that too much was made of the mere fruit tree department of the nursery business; his impression was that probably not one-third of that \$40,000,000 was from fruit tree sales, and that this proportion would be continually growing less, as the country increased in wealth and refinement. Eastern nurserymen were already experiencing this change and profiting accordingly. Their best sales were from ornamental trees, plants, and flowers. This was the natural tendency of civilization as exemplified in European nurseries. The fruit tree department became in time a very small portion of their business. It would be wise in Western nurserymen to make this change, and govern themselves accordingly. But this branch of the business required a high order of intelligence. The art of adornment should be understood; that an acquaintance be formed with those trees, plants, and flowers that would aid in adornment. A nurseryman, in fact, must be an educator of the community as well as a nurseryman; his own place should be a model of landscape gardening, and he should have specimens of all varieties to be obtained, as well as specimens of skillful growth, so that those in his vicinity could learn their value for their

own purposes. Good examples were always catching, and he illustrated in various ways how communities had been rendered industrious by the introduction of articles for the cultivation of taste and luxury in their neighborhood. He said that at present Western nurserymen take but little interest outside of fruit trees, but with the increase of wealth and refinement in the general community they will find that as assistants in this direction they have much to learn. Even the cultivation of a few flowers assists in this direction, and yet, as a general thing, nurserymen and horticultural societies acted as if flower culture was but a trifling occupation, fit only for women and children; but it was soon found that from flower culture the taste for high branches of gardening followed, until it had at last culminated in fine public gardens and private grounds, in which the most expensive, most valuable results of the landscape gardener found a home. Even what we might consider trifling in a love for flowers or beauty generally—call it even finery if you will—has a beneficial influence on a community in various ways. The woman who sees her neighbor with pretty things or fine surroundings is bound to have the same as her neighbor, and the industry of the male portion of a family is bound to be stimulated by the wants of the gentler sex. Thus it follows that the nurseryman, in encouraging in the fairer sex a taste for flowers, is not only cultivating habits which will give pleasure to thousands, but which will react favorably in the end as a matter of business. Not only by specimens of taste and skill on his own grounds, but also by the encouragement of horticultural exhibitions will his best interests be served; not merely exhibiting what may be simply new, but also specimens of his highest skill, thereby creating a standard of beauty which those who see will aim to equal. In conclusion, in summing up his own remarks, he said he wished it to be understood that the amount of money involved in the nursery business was much greater than those actually engaged in it had any idea of. That it was well worthy of a study of those business rules especially adapted to it. That it was a business that gave pleasure to thousands and pain to none, and that that part of it which dealt with the beautiful, rather than that which was merely useful, would most assuredly grow in popular estimation, and that it was in this direction that those who were looking to the future prospects of the business should carefully attend.

PROPAGATION OF CUTTINGS.

I am very fond of experimenting in connection with the propagation of plants, and this autumn I tried a new method which worked admirably, and which I will describe to you, thinking, perhaps, it may be of some service. I have flower beds during the summer, and although mostly made up of annuals, I plant out one border of houseplants, geraniums, heliotrope, etc. The plants I bed out are pretty well used up with blooming the entire summer, and are stalky and bare, so unfitted for repotting and placing in the house. To have new, fresh plants for the window and stocky ones to plant out again in the spring, I took cuttings the last of August and managed as follows:

A square box was found, four feet on a side and six inches deep; holes were bored in the bottom and a layer of pounded brick placed in the bottom for drainage. I found some coarse sand that was dug out of a well and filled in the box until within two inches of the top. In this sand I placed cuttings of

everything I wanted, labeling each variety. I had no sash to cover the box with so I placed it under a great appletree and made a frame of light wood the size of the box, covering it with unbleached muslin and placed it closely over the top of the box, thus confining the cuttings, and still giving them a pretty good amount of diffused light. I watered so that the sand was pretty well soaked continuously, and nearly everything grew that I placed in my propagating bed. This is a very easy way to get fresh plants that would cost a good deal at the greenhouse, and the whole work can be done by the housewife or daughter without calling in the aid of the men folks.—*Mrs. C. W. G. in Detroit Free Press.*

APPLES.

"SWEET AND SOUR" APPLE SO-CALLED.

Mr. Chas. A. Green says: "I have been informed by budders of their success with half the bud of a sweet apple and half of a sour, united; and that the fruit from such budding was half sour and half sweet, but I am incredulous." And so am I. I have heard of such things, but have never seen them. The successful grafting of two buds so that they shall unite with each other, and at the same time both unite with some other stock, is a very difficult feat. If it were done, I cannot see how it could bring about a union of the two varieties of apples in the way above mentioned. If anything of the kind were possible, I should expect each apple to resemble each other in essential particulars, and that each apple would be uniform in quality in the two halves. There is a variety of apple sometimes raised which has ribs which are very prominent. The prominent ribs are sour, the intervening hollows are almost tasteless, and are called sweet. I do not know that any one claims that it originated from a split graft. The fruit is called "sweet-and-sour."—*Professor Beal.*

NORTHERN SPYS AS KEEPERS.

The Spy is a thin-skinned apple, and very sensitive to rough handling; but if picked and packed without bruising, it is a good keeper, and retains its fine flavor to the last. I have kept them until the 4th of July, only putting them carefully into barrels. If any one wishes to keep a few apples until late in the season, let him wrap each one in manilla paper, place them in a tight barrel, and pour on clean, dry sand. If the barrel is shaken, the sand will fill all interstices, thus excluding the air, and the apples will keep finely. Of course this must be done at gathering time, for if neglected until the fruit is in a condition for eating, they cannot be kept for any great length of time.—*Correspondence Country Gentleman.*

THE BALDWIN APPLE.

Brooks' history of Medford, Mass., in relation to the origin of the Baldwin apple, has the following: To Medford belongs the introduction of the celebrated Baldwin apple. The first tree producing this delicious fruit grew on the side hill within two rods of the former Woburn line, and about ten rods east of the present road which leads from West Medford. It was on the farm occupied by Mr. Thompson, forty or fifty rods south of what used to be called the Black Horse tavern. At the request of Gov. Brooks, the writer made a visit to that tree in 1873, and climbed it. It was very old and partly decayed, and bore fruit abundantly. Around its trunk the woodpecker had drilled as many as five or six circles of holes not larger than a pea, and from this visible peculiarity the apples were called Woodpecker apples, which was afterward shortened to Peckers; and during my youth they were seldom called by any other name.

How they came to their present name was this: Young Baldwin, of Woburn, afterwards a colonel, and father of Loami, was an intimate friend of Ben. Thompson, afterwards Count Rumford. All lovers of science, they asked permission of Prof. Winthrop to attend his course of lectures in natural philosophy at Harvard College. Twice a week these two young men walked from Woburn to Cambridge to hear the learned professor. One day as they were passing the Woodpecker tree they stopped to look at the tempting red cheeks on the loaded boughs, and, as a result, they took and tasted; each pronounced it to be the finest apple he had ever eaten. Some years after Col. Baldwin took several of the scions to the public nursery, where, from this circumstance, they took his name. In the September gale of 1875 the parent tree fell, leaving behind, however, a good posterity.

HISTORY OF GRIMES' GOLDEN.

The Grimes' Golden is a western apple, and originated in Brooke county, West Virginia. By whom the seed was sown, it is not positively known, but believed to be a Mr. Crawford. This seedling was among the first apple trees produced by an American in the Ohio valley. As such, without taking into consideration the superior quality of the fruit, it is worthy to become a matter of history. The many good qualities of both tree and fruit constitute it doubly so. This extraordinary apple has few equals in the catalogue of American fruits; it certainly has no superior. Taking into consideration the hardiness and long life of the tree, its habit of constant bearing, the superior quality of the fruit, together with the great length of time it is in season, the Grimes' Golden stands preëminent.

The original tree, now over ninety years old, is in the orchard of Dr. Joshua Gist, formerly owned by Thomas P. Grimes, situate two miles east of the Ohio river. This orchard of seedling trees was set out by Edward Crawford about the year 1790, and by him sold to Thomas Grimes, Sr., in 1799, at which time this noted tree bore its first crop of apples. It is said it has not failed to produce fruit every year since that time. It is a choice apple for the southern market, where it is well known. As early as 1804, Mr. Grimes sold the apples from this tree to traders on the Ohio river, to be taken to New Orleans. In 1834, the year of the severe frosts from the 13th to the 18th of May, which

destroyed the fruit throughout the entire region where this tree was growing, it produced a full half crop of apples. This circumstance gave additional notoriety to the tree and fruit, and scions were sought for grafting.

The writer of this, who obtained his first trees of the Grimes' Golden apple in 1838, visited the original tree, June 24th, 1879, and found it in a very good state of preservation, with a fair crop of fruit evenly set over its branches. The tree is about 30 feet in height, and measures 6 feet around the trunk 2 feet from the ground. Its branches cover an area of 30 feet in diameter. Although not a very large tree, it has frequently produced between 50 and 100 bushels of fine marketable apples in a season. Soon after the original tree came into bearing, the fruit was called the Grimes' apple, and some time later the Grimes' Pippin. After the late Samuel Wood, a noted nurseryman of Jefferson county, O., commenced propagating it, he added the word golden, calling it "Grimes' Golden Pippin." Although it is a legitimate member of the pippin family of apples, at the annual meeting of the Ohio Pomological Society, in 1866, the word pippin was dropped; since which time it has been known as "Grimes' Golden," and this name is now well established.

The tree is a strong, upright, spreading, open, rapid grower, very handsome in form, and needs little pruning; wood very hard and tough; bark dark greenish brown; foliage large, dark green and very abundant. The tree is an annual bearer, and sets its fruit evenly over the branches. The fruit is very smooth; size medium; form oblong oblate, sometimes a little angling at the crown; color light green, with numerous minute light dots when taken from the tree, but becoming a rich golden yellow when ripe; basin abrupt, tolerably deep, round and smooth; calyx large and open; stem long and slender; cavity deep and regular; core small and closed; seeds numerous, plump and dark brown; flesh yellow, very fine-grained, breaking and juicy; flavor slightly sub-acid, aromatic, rich and sprightly; use, dessert and culinary; season October to April; quality best.—*G. F. N., in Country Gentleman.*

IS THE BUSINESS OF APPLE GROWING OVERDONE IN THIS STATE?

Hon. F. M. Holloway of Hillsdale, answered this question at a Farmers' gathering, as follows:

I am called upon to express my views before this Institute, on a very simple question in the abstract, yet carefully considered in all its relations to the farm, to humanity, that constitutes our population, it becomes one of the most interesting subjects before us, and should receive careful consideration by us in determining the right, and when so done, we should not fail to put the right in practice. The question, apple-growing, is it over done? must be answered by us in the negative with a firm and positive protest, as to the manner in which it is done, and a further protest as to the results or profits on the amount invested in apple growing as a branch of mixed farming. There are nearly 5,000 plantations of apple orchards in this county alone, not counting the number of garden orchards in the cities and villages. Many of them were of early origin and embrace but a small proportion of the better varieties of fruit. They have stood a continual cropping for the last 25 years, and in that length of time there has been but one or two years, at most, but what there has been a ready market for the fruit, with paying profits for raising.

HOW IT IS OVERDONE.

The perfect adaptability of our soil for the growing of the apple, and the altitude of our country, has insured us a reasonable crop almost every year in succession. This result, in connection with the demand for apples in the past, has thrown many of the apple growers of the country and State off their guard,—and to-day finds them in the back-ground, halting between two opinions, inclining to the belief that apple-growing is overdone, and it will be wise for them to cut their orchards down, except for family supply. With all such we beg to differ in conclusion, and in so doing invite them to consider present surroundings, compare them with the past, and see if the future is not radiant with hope, even assurance, to him who will apply himself practically and scientifically to the work. The practical, scientific farmer who seeks to have the best in all his surroundings will have no desire to cut down his orchard, although the last few years have been years of depression in apple raising as in all things else. When starting in culture he sought the best varieties. His habit of doing all things well, did not permit him to overlook the feeding of it liberally with manure as he would his cornfield. Science taught him that care must be taken in trimming, in keeping free from injurious insects and preventing overbearing. The result is a fine crop of extra apples every year, fit for any market.

Few, in comparison to the whole, of our farmers come up to the standard. Many are inclined to run largely to some specialty in cropping, to the neglect of the orchard, the specialty always getting the manure. The result is a scabby tree, overburdened with top, filled with vermin, and producing but few apples fit for market. With such a spectacle before him he concludes that apple growing is overdone, and it is best to cut his orchard down, and so say I. With this resolve I would make one more, and that should be to start anew.

THE REMEDY.

I would not have over half a dozen varieties: these should be of the choicest, adapted to the soil I had been making for years, to produce the specialty that I had been following. I would use a little science in propagating. I would be painstaking as to worms, manure, cultivation and overbearing, when that time arrived. With these particulars carried out and followed, there would be no occasion to say that apple growing is overdone, for to such there would always be a market at paying figures. I have assumed that apple growing is not overdone. That the low prices and glut of market is owing to lack of properly growing and handling our apples so as to place them before the consumer with all their high qualities as when plucked from the tree. In proof of this we have only to refer to the limited territory in the United States adapted to the growing of the apple in full perfection.

MICHIGAN'S ADVANTAGES.

We name the Lower Peninsula of our State preëminently first in quality, quantity and sureness for crop. Then follow New York, Northern Ohio, and some of the New England States, with fair quality, but much uncertainty as to crop. Pennsylvania, Southern Ohio, Indiana and Illinois are very uncertain as to crop, and when obtained, is but medium at best. Kansas and Nebraska, behind their belts of timber and in screened positions, are developing beautiful specimens to the eye, but destitute of the vinous flavor and aroma so

common to the Michigan apple. Of all the other States and Territories, they are a failure in apple-growing, especially so far as quality is concerned.

EXTENT OF THE APPLE MARKET.

What is the extent of our markets, and will they continue as in the past? We answer, most assuredly they will. The whole production of the West will no more than keep pace with their increase of population. Should it develop beyond calculation, the distance in transportation by rail would still give us Illinois, Wisconsin and the South, as heretofore. The facilities for manufacturing into dried and canned goods are other openings, the value of which we can hardly compute. Three years in five we have found a good market in the States east, owing to their failure to produce, and this has been demonstrated for 20 years. Another interesting feature connected with the market for apples, is the fact that England is calling for some of our better varieties. Could we have quick transit by water all the way from Michigan, a fine field would be open to us. But our method of handling in barrels, with the shaking by rail to New York or Portland, would be a great drawback in their appearance when they meet the foreign market.

CONCLUSIONS.

Our conclusion may be summed up in brief, as believing that apple growing is not overdone. That the methods of most farmers are so half way loose as to give them very little, if any, profit in the business, and by this we mean:

1. In propagating poor and worthless varieties for market.
2. In not properly caring for their orchards, in feeding, pruning, cultivating and thinning when over-bearing.
3. In not guarding sufficiently against insects, and
4. In not handling fruit when matured with proper care.

Could our practice on these four points be fully corrected, I am satisfied we would not have more apples than we like. Neither would we have any branch of the farm more profitable than the orchard.

If I am asked to name the varieties best adapted to our soil and location for a market orchard. I should say Red Canada, Baldwin, Northern Spy, Jonathan, Greening, Peck's Pleasant, Limber Twig, and Golden Russett. Here are eight varieties, all possessing the finest attributes of quality, all hardy and acclimated, and most of them annual bearers. Most of them have a world-wide reputation, and are the first sought for.

I would not add a greater number. If my soil was gravelly, the Red Canada, Jonathan and Greening should predominate. If clayey, Baldwins and Spys. For a family orchard, or home use, I would have but one or two trees of a kind, and I would study to get a succession. There is a great defect with very many of the orchards of the country in this particular. From September to November you can find but very few choice eating apples in orchards or market. Always plenty of windfalls, which are only fit for hogs. For the comfort of self, family and friends, this deficiency should be supplied. It could be done readily, and with little expense.

WHAT IS A CRAB APPLE?

Botanically, a crab apple is a wild apple. Of these there are several species, the best known of which are

- (1) The European Crab, *Pyrus malus*.
- (2) The Siberian Crab, *Pyrus baccata*.
- (3) The American Crab, *Pyrus coronaria*.
- (4) The Narrow leaved Crab, *Pyrus angustifolia*.

The last two named are both American crabs; No. 3 being the common wild apple of the Northern States and Canada, and the last belonging to the South. *P. coronaria* is, however, found south as well as north. *P. malus* is the wild form of our common apple. These are the crabs, *botanically* speaking; but pomology recognizes as a crab any small apple suited for cider-making, such as Hughes' Virginia crab and others of a like character.

There has lately arisen a third use of the word, which may be called the nurseryman's, orchardist's and fruit dealer's definition. The Siberian and American crabs having come into cultivation chiefly as ornamental trees, there has sprung from them (chiefly from the former) a class of apples differing from all others, and varying considerably among themselves. It is well understood that when wild fruits are subjected to cultivation they show a tendency to "sport," that is, to change their size, color, flavor, etc., frequently for the better. Sometimes this sporting occurs only on a single limb. It is then called "bud variation," and may be perpetuated by budding or grafting from that limb. But usually sporting occurs from the seed, and the product, if better than the original wild fruit, is called an improved sort, and if from a crab apple, an "improved crab." This improvement may be due only to the change induced by cultivation; or it may be caused by a crossing with some already improved apple of the same or another species. This crossing is the result of the application of pollen from the flowers of the improved to the flowers of the wild sort. When the two belongs to the same species (both *P. malus*, for instance, one the wild and the other improved fruit) then the apple that springs from the new seed is a true "cross." But if the new seedling results from a mixture of two distinct species (*P. baccata*, for instance, with *P. malus*) then the seedling is a "hybrid," just as a mule is a hybrid between the horse and the ass.

These "nurseryman's crabs" are becoming very numerous, and are distinguished among themselves by wide differences. Some are but little advanced from the wild forms, while others have been "ennobled" to the degree that they had lost all, or nearly all, the peculiar characteristics of their wild ancestry. About all the best known apples of this class have sprung from the Siberian crab, as female or seed-bearing parent, though a few such, as the Soullard, are of American stock.

The calling of all these new hybrids of the *Pyrus malus* or the *Pyrus baccata* by the name of "crabs" is very misleading, especially in those parts of the country where people have but little knowledge of them. Many nurserymen now designate them as "Hybrid Siberian apples," and this name should, we think, be generally adopted. The merits of this race of apples on the score of hardiness, productiveness, and beauty, are not to be despised, especially for severe localities along our northern border and in Canada. For sweetmeats they are much superior to common apples, either canned as preserves or for jellies; the latter, when well made, being quite equal in firmness and fineness of flavor to the famous guava jelly of the tropics. Improvement is still going on, so that a few varieties are of quite large size and good dessert quality. Like the Russian apples (which are by some botanists referred to the same origin), the proportion of winter fruit occurring among these is rela-

tively small, yet a few are good keepers, and these are among the best in quality. Among them are the Northfield Beauty, or Cady's Crab, of Vt., and Meader's Winter, a Minnesota variety.

It is most pleasing to be able to state that so eminent a hybridist as Mr. Pringle, of Vermont, whose Snowflake, Alpha, and Ruby potatoes; Conqueror tomato; Champlain and Defiance wheats; Golden Drop, Lady Charlotte, and Vermont Giant grapes, testify to his skill and success, is also engaged in producing hybrid apples between *P. malus* and *P. baccata*. He has been at this work for ten years past, and some very fine new varieties thus produced have fruited the past season. It would be premature, and in fact a breach of confidence, for me to particularize in regard to these now, but I can promise to those earnest pomologists who have so long been working to spread orcharding northward into the "cold belt," that some exceedingly choice kinds may be soon expected from among Mr. Pringle's large collection of hybrids.—*T. H. Hoskins in Land and Home.*

THE WAGENER.

B. Hathaway, of Little Prairie Ronde, says of the Wagener:

This apple had a run of popularity in all parts of the State, nearly equal to, and in sections surpassing that of the Baldwin. Although experience has somewhat lessened the confidence of growers, it has characteristics, of both fruit and tree, that will commend it to the attention of planters in spite of its defects.

As a nursery tree it is unsurpassed in vigor and beauty; and this is one reason why it has been pushed into notice so persistently; often beyond its deserts. Nurserymen like to grow it, and men who go to the nursery and choose trees by the eye are sure to buy it.

In early productiveness there is nothing in all the list that will compare with it. It is only necessary to get it well established, and it begins to bear at once, not a few specimens, but a full crop for the size of the tree. Even from nursery rows of only three or four years' growth, the fruit will often pay for the gathering.

It will not hold like the Baldwin, but keeps fairly, and sells at about the same price. It has a thin skin and tender flesh, consequently, like the Spy, it requires careful handling, and like that variety, keeps better in open crates than in tight barrels, where a large quantity is to be stored for the spring market.

For its early productiveness, however, which is one of its chief recommendations, something has to be discounted from its ultimate value.

The habit of bearing at an early age is so persistent that the tree becomes permanently dwarfed, or so much so that at fifteen years, when the Baldwin will be producing four or five barrels, or more, the Wagener will give only half as much. And it is reasonable to suppose, though here we have not demonstrated the fact from experience, that the longevity of the tree must be more or less impaired. It must be conceded also, that quite often a large proportion of the crop is defective, and that it is rather inclined to fall prematurely. Still, where a man has no fruit, as in the newer parts of the State, it is no doubt the best of economy to plant it quite largely.

PEARS.

DOYENNE D'ETE.

Secretary E. Williams, of the New Jersey Horticultural Society, who has an experimental pear-orchard refers to Doyenné d'Été ripening about July 20, as "best and earliest," and "unlike most pears it is not improved by house-ripening, attaining a higher degree of perfection if ripened on the tree."

THE DUCHESSE.

Fuller, in his Pear Culturist, relates the following bit of romance in connection with the celebrated Duchesse d'Angoulême pear: A French nobleman, observing his tenant about to destroy a fine, thrifty pear tree, inquired the cause. He was told that it was a chance seedling, and had borne no fruit in twenty years. He had already cut its roots preparatory to the first stroke, but was ordered to let it remain. He did so, and in the following year it was loaded with superb fruit of an entirely unknown variety, which at once became celebrated. The root pruning the gardener had given it worked like a charm. Not many years afterwards, when the Duchesse d'Angoulême was passing through Lyons, its inhabitants sent to her their hospitalities. Nine fair maidens presented the Duchesse with golden salvers, on which lay heaped this precious fruit, and begged her to bestow on it her name; and the pear, now recognized as the crowning glory of all fruits, was thenceforward known as the Duchesse d'Angoulême.

THE LAWRENCE.

The Germantown Telegraph has this to say of this valuable pear: This pear does not receive as much attention by general growers as it deserves, though it is beginning to be appreciated. We have few superior in point of quality or for keeping late, and none in its early fruiting and steadiness of bearing, or in the hardiness of the tree. It is very accommodating too in ripening. It commences to mature in the latter part of October and goes on, as it is exposed to a warm atmosphere or kept in a dark, cool place of even temperature, up to February! We should suppose it would be just the pear for general cultivation among farmers, who, if they would give it the same attention they give to other crops of the farm, would be sure to get abundance of excellent fruit. The tree can be obtained at almost every nursery, and we commend it to the attention of our agricultural readers as a substantial acquisition in the pear line and not a fancy article.

If we were to be asked to name the best pear for general cultivation, we should unhesitatingly say the Lawrence.

RIPENING PEARS.

Mr. Patrick Barry, of Rochester, N. Y., good American authority on fruit culture generally as well as on the subject of ripening pears, says:

The process of ripening on the tree, which is the natural one, seems to act on the fruit for the benefit of the seed, as it tends to the formation of woody fibre and farina. When the fruit is removed from the tree at the very commencement of ripening, and placed in a still atmosphere, the natural process seems to be counteracted, and sugar and juice are elaborated instead of fibre and farina. Thus, pears which become mealy and rot at the core, when left to ripen on the tree, become juicy, melting and delicious when ripened in the house.

THE PEAR ORCHARD OF COL. WILDER

is said to be the finest experimental orchard of the kind in the country. It covers about twelve acres of ground and once contained nearly a thousand varieties which are now reduced, from one cause and another, to between eight and nine hundred. Nearly every tree is bearing fruit this year, a great many are loaded down almost to breaking, and the crop is estimated at not less than 2,000 bushels. The soil is a heavy sandy loam, and is plowed and kept clean by cultivation, crops of small fruits and vegetables being grown between the trees, which are from ten to fifteen feet apart, too near it is thought. As fast as the fruit is picked, it is carried to the fruit-house and placed in a cool room in the basement to ripen, and when in the proper condition, is sorted, packed in boxes holding a bushel each, and marketed. About thirty bushels of fine-looking (and tasting) Doyenné Boussocks were nearly ready for boxing. The Bartlett is the most popular sort, no other selling well when that is in the market. On the lawns about the residence are many fine ornamental trees, among them a large and beautiful specimen of Cut-leaved Birch, which Col. Wilder thinks highly of as a lawn tree. I was kindly showed about the place by a son of the proprietor, to whom I am indebted for most of the above information.—*Cor. Rural New Yorker.*

PEACHES.

THE AMSDEN.

Mr. George Husmann reports to the Missouri Horticultural Society, the Amsden peach as "one of the few fruits which have not been over-praised." His first specimens ripened June 13; a number of this variety measured eight inches in circumference, and his crop averaged over \$5 a bushel, "as they were gone before the drouth set in." That it is a clingstone is the one objection to it. He thinks Amsden and Alexander distinct, but so much alike that it would hardly pay to have both, and his choice is Amsden.

VARIETIES OF PEACHES.

B. Gott, of Arkona, Canada, sends us the following note as to varieties of peaches:

The present rage for growers is for early peaches, but the margin of profits lies rather in the direction of the later sorts. Crawford's, early and late, still hold their own without the slightest deviation of popular favor. Amsden's June is said to be good, and being early, followed closely by Early Louisa and Early Rivers, two well known English peaches of great merit. These are immediately followed by Hale's Early, a really fine peach, early and of good quality. This peach seems to be doing much better lately than it did a short time ago, as it then possessed the bad fault of being very liable to rot. However, this may have been merely climatic. Seedling peaches are produced very rapidly and in great numbers, and some of them are possessed of very good qualities, rendering them exceedingly profitable growing. Some very superb seedlings of peaches were shown at the Western Fair in London this season. Mr. James Macklin, of Strathroy, Ont., showed a seedling peach at the West Middlesex agricultural fall show, that was really very fine and attracted much attention as a late peach, it being in season about October 5. Mr. George Ott, of Arkona, is now propagating and growing very largely a handsome yellow fleshed seedling peach that comes true from seed from generation to generation. It is a medium sized, round, handsome looking fruit, has a red cheek and solid deep yellow flesh, and parts readily from the stone; in season about September 20. On account of its internal value and continued solidity of flesh it will be a valuable acquisition and admirably suited for market or distant shipment.

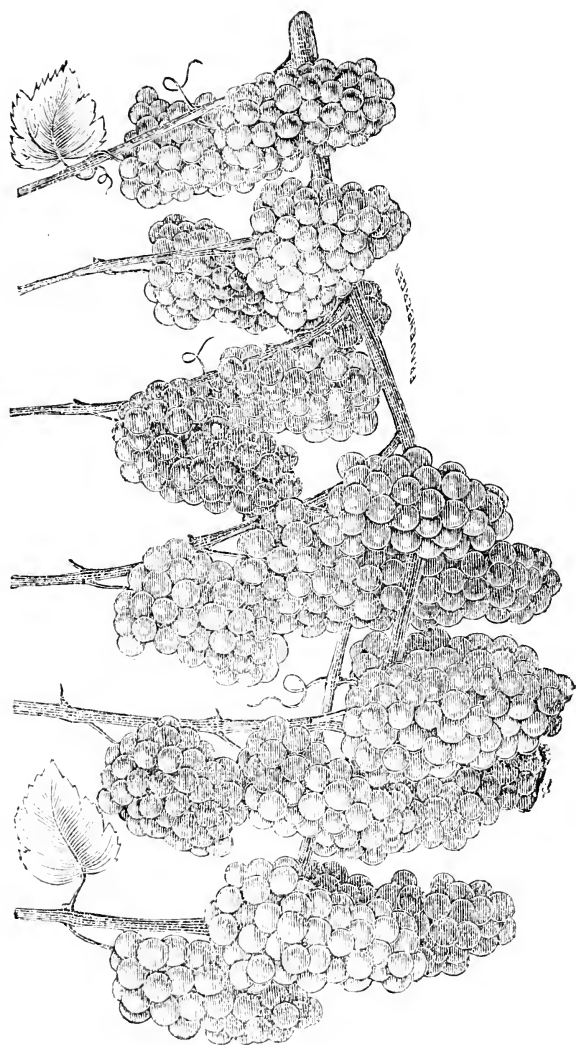
Many other new varieties are zealously trumpeted loudly over the length and breadth of the land as possessing new and most valuable qualities, and possibly some of them do. Among the two hundred and fifty varieties of peaches now collected and catalogued by our nurserymen and fruit writers, it will be found very difficult to produce a new one possessing qualities differing from any of them. I would not, however, disparage legitimate and real progress in any department of industry, much less in this. I say let us have all the valuable qualities in a fruit it is possible to attain, but let us be cautious in running after novelties to our ultimate loss. Among the most successful originators of new peaches are H. M. Engle & Son, Marietta, Pa., who have tested and named Downing, Saunders, and Wilder, which are gaining quite a reputation among growers of this fruit.

GRAPES.

WHITE GRAPES.

The following extracts from the columns of the *Country Gentleman* led us to seek farther information, which resulted in securing cuts and descriptions of the Prentiss and Niagara, which are inserted in the Portfolio:

The white grapes.—A large number of the native "white," or rather light



Branch 26 inches long, weight 7 lbs.
Exhibited at Am. Pom. Society, 1870.

PRENTISS.

From a photograph by G. W. GODFREY,
Rochester, N. Y.

green grapes were exhibited at the time of the meeting of the American pomological society at Rochester, and were examined side by side, by a number of the prominent fruit growers. Among these sorts were the Dutchess, Prentiss, Lady, Allen's Hybrid, Niagara, Rebecca, and some others. Several expressed surprise at the similarity of flavor possessed by all, or rather at the equal degree of merit in each, on tasting side by side. The Dutchess ranked among the best in quality, the Prentiss attracted much attention on account of its sweet and delicate flavor, and the Niagara for a combination of desirable qualities, including its large bunch, showy appearance, and fine flavor, in which, however, it was hardly equal to some of the others. The Pocklington was very attractive for its large, showy bunches, and it was of fair quality. None of these, however, are quite equal to the Croton in quality, although all exceed it for strong growth and freedom from mildew.

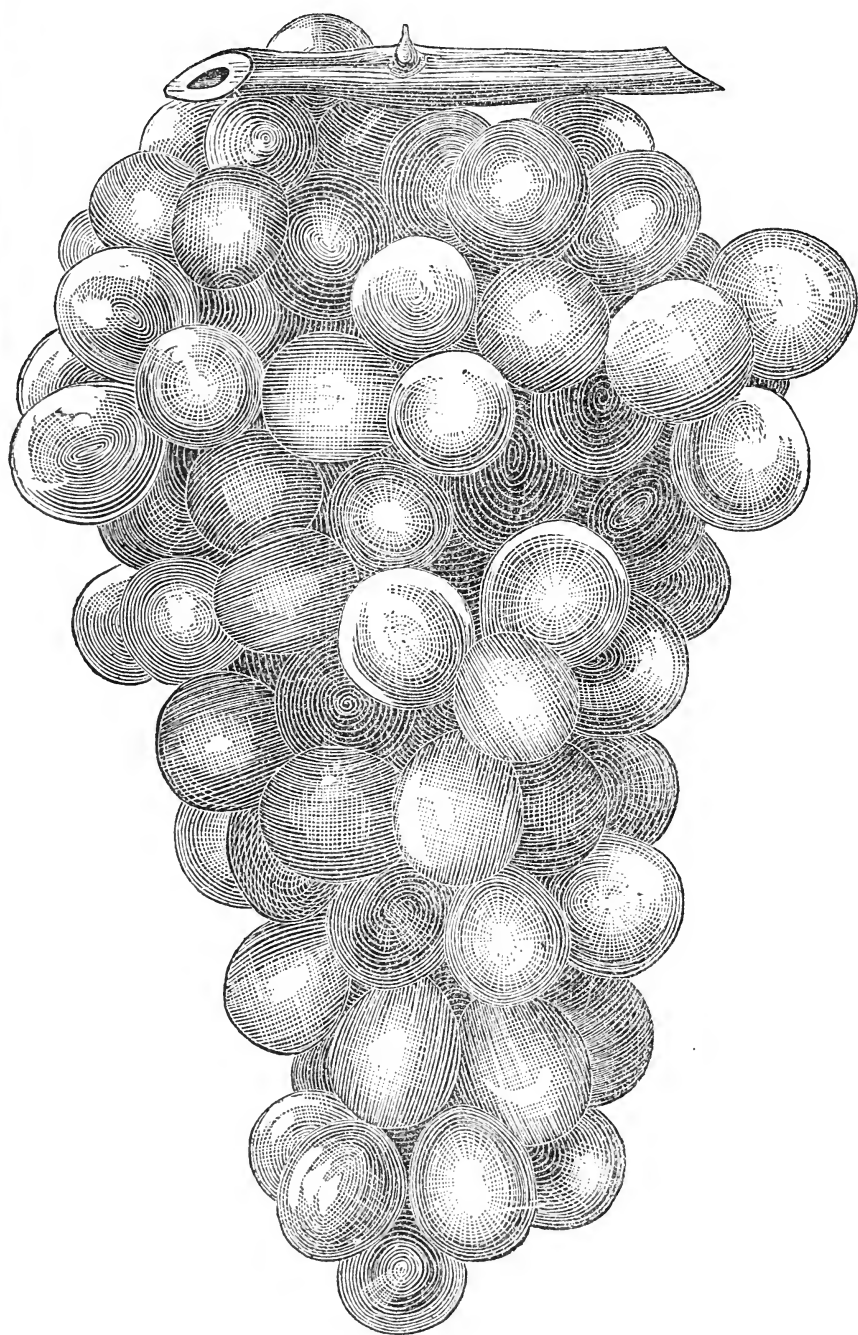
The grapes at Rochester.—T. T. Tyon, the well-known pomologist, gives his estimate, in connection with that of the fruit committee, of the comparative value of the native grapes exhibited by the American pomological society at Rochester, in the following order—the Dutchess standing first in quality, and for general merit the others would be, Niagara first, Prentiss second, and Pocklington third.

THE PRENTISS.

This is a new white grape of best quality. It is a seedling of Isabella, originated by J. W. Prentiss, of Pultney, Steuben county, N. Y., on Crooked Lake near Hammondsport. It has been in bearing several years, gradually improving from the first. Mr. Prentiss now has in full bearing nearly an acre which each year produces uniformly a good crop of perfect clusters, the fruit of which, for the past three or four years, has sold in New York markets at 16c. to 25c. per pound when Concord was selling at 3c. and 6c. per pound and Delawares from 6 to 10 cents. The past season (1879) he sold nearly two tons through one commission house (C. N. Wixom) which netted him after paying freight and commission 14 cents per pound, while Catawba netted him only 3½ to 4 cents, and Delawares only 5 to 6½ cents.

The following is a description of this grape: Berry, medium to large, yellowish green, sometimes with a rosy tint on side exposed to sun. Skin thick and very firm. Flesh tender, sweet, melting, juicy, with a very pleasant and musky aroma; free from foxiness; little if any pulp; seeds few and small; very similar to Rebecca in quality, but vine a vigorous grower, and foliage very distinct from Rebecca. Foliage healthy, thick, resembling Diana or Isabella, showing its native origin. Vine a good grower, and very productive, inclined to overbear, and clusters should be thinned unless pruned close; vine hardy, and buds uninjured with thermometer 15 to 20° below zero. The grape is an excellent keeper, and was exhibited at the Western New York Horticultural Society, at Rochester, January 22d, 1879, in perfect condition. Ripens about with Concord.

The cut represented herewith is from a photograph of a branch exhibited at the meeting of the American Pomological Society, Rochester, N. Y., in 1879, where it attracted much attention and received very favorable notices. This grape is under control of T. S. Hubbard of Fredonia, N. Y., and will not be offered for sale before fall of 1880 or spring of 1881.



NIAGARA.

THE "NIAGARA."

Raised by Hoag & Clark, of Lockport, N. Y., is without any taint of foreign blood, being strictly and purely a native grape. It is a seedling of the Concord as maternal parent fertilized by the Cassady, grown in 1868 among thousands of seedlings of the above cross. It first fruited in 1872 and has continued to bear large and increasing crops of fruit every year since.

The vine is a strong grower, extremely hardy and free from disease.

The leaves are variable in shape, some resembling the Concord and others the Hartford, but all are very large, thick, and leathery, remaining on the vines even to the base long after all other varieties have faded and fallen; the leaves are of a deep, healthy, green, and look as though they were freshly varnished each morning, they are so glossy.

Enormously productive, even more so than Concord.

Bunches very large and uniform, many weighing from one-half a pound to fourteen ounces, and even more; moderately shouldered and very compact.

Berries large (as large as Concords) mostly round, light greenish white, many semi-transparent and slightly ambered in the sun.

Very little pulp, melting and sweet to the center, parting freely from the seeds, and can be freely eaten without making the tongue sore by those people who do not swallow the seeds; not foxy, but with a flavor and aroma peculiarly its own and one very much liked by most people.

Quality good, decidedly better than Rebecca.

Skin thin, tough, very firm, and adheres very firmly to the peduncle or stem.

Ripens with the Hartford but hangs very firmly to the stem, and will remain on the vines until frost, growing better and better, and without in the least wilting or withering, probably owing to its peculiarity of retaining its leaves green and healthy to the last.

This was said to be the most beautiful and showy of all the purely native white grapes shown at Rochester, and much resembles in size, bunch and color a fine specimen of hot-house or California grapes.

The accompanying cut was taken from an ordinary cluster without any embellishment in fact; is not quite full size, and but poorly shows the beauty of bunch and berry.

The entire stock of this grape is now owned by a company called the "Niagary Grape Co.," who are propagating vines and setting them in vineyards, they retaining all the wood and part of the fruit, and when they put vines on the market they propose to send out *every vine* under seal, and guarantee it true to name, so that any person by taking ordinary pains to see that the seal is not disturbed, cannot be swindled by buying a bogus grape; growers will be glad to test for themselves this variety, as well as the Prentiss and other promising white sorts when the vines are in the market.

THE IONA.

Secretary Bateham, after returning from the Rochester meeting of the American Pomological Society, in commenting upon the grapes he saw there, dropped the following remark in the Michigan Farmer:

"The Iona grapes from the vineyard of Mr. Bradfield, of your State,

were admired by all who saw them. I wish Mr. B. or some one else, would tell us what is the secret of his success with this desirable grape, when almost everybody has given it up on account of its liability to failure from mildew or rot."

Mr. Bradfield prepared the following reply which he intended to give at the annual meeting, but was prevented by sickness in his family:

First, there is no secret, if there is it will be found in the following: In 1865 my first dozen of No. 1 one year old Iona vines were bought of Dr. Grant (the originator), costing me about \$20. Two of these were planted on the Grand River Flats, the rest on the side hill, about half way up to the table land. The soil, a sandy and clay loam, was enriched by a good coating of barnyard manure. The ground was trenched some 18 inches deep with the plow, the vines set four feet apart in the row and the rows six feet apart. Only one shoot was allowed to grow the first year and but two the second. The spare wood was used for propagating to increase my stock. In 1867 I bought some more vines near Mendon, N. Y. These were fortunately propagated from sound healthy stock, a rare thing at that time for this variety. These vines were treated as the above, and are as healthy and fruitful.

In the spring of the third season one or two arms were laid down, and when in full bearing the vines were closely pruned in November, laid down and covered with from two to four inches of soil. Summer pruning in very growing seasons is resorted to. This is done with a grass hook, as you would trim a hedge, cutting off the longest shoots. The foliage of the Iona, in unfavorable seasons, is liable to mildew, but not more so than the Delaware, the Adirondack and many others. In such seasons I have used one part sulphur and three parts dry plaster, by measure, applied with a common bellows on a dry, still day, on the windward side of the row. An inch hole should be bored in the top of the bellows, fitted with a wooden plug, through which hole it is filled from time to time with the mixture. A tin pipe about an inch in diameter is pressed on over the nozzle and soldered to it near its base, the outer end of the pipe is pressed flat, leaving an opening of one-sixteenth of an inch deep. A strip, a quarter of an inch wide, is cut off the upper lip and the lower one is turned up so as to direct the mixture up to the under side of the leaves. With this simple bellows a small boy, 12 to 14 years old can go over an acre of vines in a day, and the cost of sulphur for three or four applications in a season will be only from one dollar to one fifty per year at the wholesale price.

I have fruited the Iona for 10 to 13 years, on the river bottom and on the hillside. The vines appear as healthy now as when planted, and during that time (excepting the year they were not laid down) have borne a larger and more seasonably ripened crop of grapes than either of my other 30 varieties, not excepting the Concord or Hartford.

We made this fall 200 gallons of Iona "pure juice of the grape," from one-fourth of an acre of vines. I attribute my success with this variety, first, to plants propagated from good healthy stock; second, to close pruning in November, laying down and covering with earth; third, exemption from mildew or rot of the fruit, to judicious summer pruning and the occasional application of sulphur and plaster, commencing when vines are in full leaf.

As Iona vines are now very cheap, there is no temptation to propagate from feeble stock, and I see no reason why any person having a good soil with a porous subsoil, can't grow this desirable grape, as well as those not worth half as much in the market. It is gratifying to know from the increased number

of exhibits of this grape at our fairs, and from the superior quality of the fruit exhibited, that the Iona is receiving more attention in this State.

E. BRADFELD.

Ada, December, 1879.

DISTANCES FOR GRAPES.

The strong-growing American grapevine must have ample space to grow. They may be restricted for a few years and bear moderate crops, but when they are older they should have a full chance to throw out their long arms. The late Wm. A. Underhill of Croton Point, N. Y., showed us a part of his twenty-year Isabella vineyard where he allowed the vines to extend over a roadway, giving them some sixteen feet more room. The improvement in the crop was striking. Mr. A. Hood of Ontario planted Concords six feet apart each way. They bore little fruit. The spring of the seventh year, he took out every alternate vine, and then had a fine crop. He tried a similar experiment on a large Catawba vineyard planted eight feet apart; the result was a greatly increased quantity of grapes. He also stated that Concord vines covering 24 to 48 feet trellis, carried by actual measurement more grapes than any adjoining vines 12 feet apart and occupying the same extent of trellis. An experienced grape-grower has just stated to us that he had planted his vines 12 feet apart, and had grafted every alternate vine with another sort. The grafts failed to grow, and the old vines, being thus thinned to one-half in number, gave a much better crop than the whole did before. We might cite many other cases—all showing the importance of giving ample space to strong growers. And one other precaution should always be observed—never to allow the vines to overbear; thin out the numerous bunches. We do not now hear vineyardists, as formerly, boast of the many tons of grapes they have raised to an acre, as they have learned that the fruit is better, and the vines less exhausted, when the thinning has been properly done.

JOHN J. THOMAS.

HOW GRAPES RIPEN.

According to *Comptes Rendus*, St. Pierre and Magdalen have arrived at the following conclusions in regard to the changes which grapes undergo while ripening. During the process they evolve carbonic acid in darkness as well as light, when exposed to the air or placed in an indifferent gas. The amount of oxygen evolved in air is always in excess of the oxygen taken up; this has been remarked in the case of observations extending over a long space of time. Grapes can absorb or give off water according as they are placed in a moist or dry medium. As the change goes on the acid decreases in amount, while the quantity of sugar increases. The acids and the glucose are carried to the grapes by the sap. Here the acids are slowly consumed, while the sugar increases in point of concentration, and at a still later stage the sugar itself is consumed.

KEEPING GRAPES.

Every year we have some new process presented to us for keeping grapes fresh in winter, each being a variation of the old way. It is well for those who are packing their grapes for winter, to keep in mind the essentials for success, and to vary the non-essentials according to circumstances. Standing first as indispensable, the fruit should be well grown and well ripened. Matured rich juice will keep the bunches far better than if green and watery. But this is much better understood now than in former years, and better cultivation is now generally given. The next requisite, and also indispensable, is to place the fruit in a cool dry room. If it is well matured, it will not freeze several degrees below 32° Fahrenheit. It will not endure long in a warm temperature. These are the two great essentials. The materials in which the grapes are packed are of secondary importance. Baked sawdust is excellent, because being a non-conductor of heat it preserves a uniform temperature; and absorbing moisture, it keeps the fruit dry. Soft straw, chopped an inch long, is a good material to pack in, and is more easily freed from the berries. Dry maple leaves answer a good purpose. Cotton batting does well, if previously well dried. A damp room should be avoided, as it would cause mould. Waxing the ends of the stems amounts to little, as the moisture is absorbed or given off all along the sides.—*Country Gentlemen.*

 BERRIES.

STRAWBERRIES.

The following delightful article has strayed away from its author and we cannot give the deserved credit:

This luscious fruit would seem to have been cultivated in gardens as long ago as 1480, for in the well-known episode in the play of Richard III., Gloucester, when intent on murderous designs against Hastings, turns to the Bishop of Ely, and says:

“My Lord of Ely, when I was last in Holborn,
I saw good strawberries in your garden there;
I do beseech, you send for some of them.”

A hundred years later than Richard III.'s days there was, moreover a garden in Holborn, then the most aristocratic part of London, amongst whose products four kinds of strawberries are mentioned.

Another allusion to strawberries in Shakspeare occurs in Henry V., act 1, scene 1, when, speaking of the young king, the Bishop of Ely says:

“The strawberry grows underneath the nettle.”

Early in the seventeenth century the strawberries from Virginia were introduced into both France and England, and probably into Western Europe generally. The new-comers do not appear, however, to have thriven, and

nearly two centuries had still to elapse before, by means of seedlings and hybridization, the gardeners produced the magnificently improved fruit which now gratifies all our senses but hearing. To that early period, by the reference to the habitat of the strawberry, if not by its date of composition, belongs the nursery ballad in which the man of the wilderness is subjected to the withering retort, abounding in Attic salt, but not more severe than such an ultramarine question deserved :

“The man of the wilderness asked me
How many strawberries grew in the sea;
I answered him as I thought good,
‘As many red herrings as grew in the wood.’”

We find forced strawberries, and cherries, as well as ice-cream, mentioned as being served at the installation dinner at Windsor, April 23, 1667, from which Daines Barrington conjectures that hot-houses and ice-houses were first introduced into England during Charles II. reign; but the idea of forcing strawberries and other fruits, as well as flowers, had already occurred to the great Lord Bacon, who writes :

“As we have house the exotics of hot countries, lemons, oranges and myrtles to preserve them, so we may house our natives to forward them; and thus have violets, strawberries, and peas all winter, provided they be sown and removed at proper times.”

During the course of the eighteenth century no marked improvement took place in strawberry culture.

In Langley's *Pomona*, 1729, only three kinds are mentioned, though the Chili had been introduced two years previously. The *Fragaria grandiflora*, or Surinam strawberry, is by some reckoned as a distinct species, but at any rate its cultivation in this country was not attended with much success in the eighteenth century. Switzer, writing in 1724, informs us that strawberries and cherries had been forced by manure heat from time immemorial by the London market-gardeners. At the beginning of the eighteenth century, however, there seems to have existed a prejudice against the employment of manure in the growth of strawberries, for we find that an action at law was commenced by the landlord against a Dutch gardener who came to England in the reign of Queen Anne, and settled on the Grosvenor estate between Vauxhall and Chelsea. This Dutchman held views in advance of his age on the subject of liquid manure; but he was not allowed in those short-sighted times to poison the land with filthy refuse, and it has been reserved for almost our own generation to place absolute faith in the principles of Meehi, and lose all repugnance to the unethereal, whilst deglutating our doubtfully swollen berries.

The fruit was called by name of “strawberry” long before any patent slug-traps or truss-cures were thought expedient for the well-being of the fruit. It has been irrefutably proved that the origin of the syllable “straw” is the Anglo-Saxon “strahen, to scatter,” and that the fruit is called strawberry, or straying berry, from the erratic nature of its runners.

So free from deleterious qualities is the strawberry, and so wholesome is the fruit in its action, that the most restricted and cross-grained doctor cannot allege anything to its demerit. No acetous fermentation ensues from the process of digestion, and no ill effects follow a copious repast. Perhaps at this point a few remarks regarding the medicinal properties of the strawberry may not prove uninteresting to our readers. In Kettner's *Book of the Table* the following quotation occurs from Abercrombie: “Physicians concur in plac-

ing strawberries in their small catalogue of pleasant remedies. They dissolve the tartareous incrustations of the teeth. They promote perspiration. Persons afflicted with gout have found relief from using them; so have patients in case of the stone, and Hoffman states that he has known consumptive people cured by them." Amongst this category of curative properties that which refers to the gout has been the most satisfactorily authenticated. No less an authority in the botanical world than the great Linnæus attributed his own cure from podagra to the effect of strawberries; and in the *Edinburg Review* for July, 1806, there occurs an extract from the *Amœnitates Academicæ*, in which an account is given of the circumstances under which the fruit proved of such singular service to the great botanist, and which induced him to recommend it to arthritic patients in general.

PREPARING SOIL FOR STRAWBERRIES.

Rev. E. P. Roe, in *Scribner's Monthly*, gives the following practical notes:

In the garden, light soils can be given a much more stable and productive character by covering them with clay to the depth of one or two inches every fall. The winter's frosts and rains mix the two diverse soils, to their mutual benefit. Carting sand on clay is rarely remunerative; the reverse is decidedly so, and top-dressings of clay on light land are often more beneficial than equal amounts of manure.

As practically employed, I regard quick, stimulating manures, like guano, very injurious to light soils. I believe them to be the curse of the South. They are used "to make a crop," as it is termed; and they do make it for a few years, but to the utter impoverishment of the land.

And yet, by the aid of these stimulating commercial fertilizers, the poorest and thinnest soil can be made to produce fine strawberries, if sufficient moisture can be maintained. Just as a physician can rally an exhausted man to a condition in which he can take and be strengthened by food, so land, too poor and light to sprout a pea, can be stimulated into producing a meagre green crop of some kind, which plowed under, will enable the land to produce a second and heavier burden. This, in turn placed in the soil, will begin to give a suggestion of fertility. Thus poor or exhausted soil can be made, by several years of successful management, to convalesce slowly into strength.

Coarse gravelly soils are usually even worse. If we must grow our strawberries on them, give the same general treatment that I have suggested. On some peat soils the strawberry thrives abundantly; on others it burns and dwindles. With such a soil, I should experiment with bone-dust, ashes, etc., until I found just what was lacking.

No written directions can take the place of common sense, judgment, and, above all experience. Soils vary like individual character. I have yet to learn of a system of rules that will teach us how to deal with every man we meet. It is ever wise, however, to deal justly and liberally. He that expects much from his land must give it much.

I have dwelt at length on the preparation and enrichment of the land, since it is the corner-stone of all subsequent success. Let me close by emphasizing again the principle which was made prominent at first. Though we give our strawberry plants everything else they need, our crop of fruit will still be good

or bad in proportion as we are able to maintain abundant moisture during the blossoming and fruiting season. If provision can be made for irrigation, it may increase the yield ten-fold.

TWO VIEWS OF THE WILSON.

The controversy over the Wilson strawberry in Michigan has, during the past season reached a high pitch, and this fact is our excuse for inserting in the Portfolio a couple of articles from the Detroit Post and Tribune, written by two strawberry growers of experience; men in whose judgment we have a great deal of confidence:

NUMBER ONE.

A recent article asks the question, "Where are all great berries of which we hear so much?" and names over several that have been sent out to take the place of the *only* market berry, the Wilson. Well, sir, they have gone or are going after the hundreds of others that come out each year, with a great flourish; but very few of them are ever heard of again. The fact is they do not pay. We grow the berries for profit. None of us are millionaires, at least I never saw or heard of one, and we are not philanthropic enough to grow those "big Injun" berries only to please others at the expense of our own pockets. That is, consumers will not pay the difference necessary to enable the growers to make a profit growing those "big Injuns." When they do, no doubt they will be grown.

As a rule the yield of all these berries is so much less that there is no money in them. As proof of this I will give the proportional yield of my own field this year as far as harvested. I have the Wilson, Monarch, Triomphe and Seneca Chief, all on soil suited to the variety, and all have had equally good care. They stand 6, $\frac{1}{2}$, 2, 1. That is I have taken six quarts of Wilsons from the same land that I have taken a pint of Monarchs, two quarts of Triomphe and one quart of Seneca Chief. I find this to be not far from the average of other growers in this vicinity. Now to raise them and make money we must get a much greater price than for the Wilson. Do we get it? In the circular of Saturday, in Chicago, Wilsons were quoted at from \$1 to \$1.60 per case and Triomphe from \$1.25 to \$1.75. In my own returns, in no shipment have the other varieties sold higher than the Wilson and in two instances for less. The general consumer will not pay the extra price necessary to get them, because one-half the money will buy the extra sugar needed to make the Wilson as good or better.

The Wilson also gets to market in such good condition that it always sells at a fair price, while the others must be extra to sell at all. As to quality, let the above-mentioned writer eat well-grown and well-ripened Wilsons and he will not get off such a growl as that with which he closed that article. Hardly a grower here ever uses other varieties in preference when he has them.

The writer says he "would like to see the grower who has the high moral courage to exclude the Wilson and grow a berry like the Triomphe." So would we, if he did it for profit and continued it for five years. He would be a curiosity, indeed, and he would find his berry a luxury, a most expensive one to him.

I notice that at Muskegon the society cut down the standing of the Wilson from 10 to 9. I think, had justice been done, it would have been raised, if possible, instead, nor do I believe berry growers will stop growing the Wilson, because of such a change. No doubt I shall run against some one's opinion in this article, but I talk from a berry grower's stand-point, and consumer's too.

South Haven, June 30, 1879.

A. G. GULLEY.

NUMBER TWO.

I was not a little surprised in reading Mr. Gulley's article on strawberries. He is evidently behind the times, but if he will post himself fully in the progress of strawberry culture made in the near past he will be convinced that "it will not pay to grow the little Wilson any longer." I have five new varieties all better than it, and three of them more productive, larger, better in quality and color. One variety produced 26 quarts on a row, the Wilson only 14, the ground and culture the same, as they stood side by side. The Wilson sold for six cents per quart, while the other sold readily at ten cents. Remember that this was on trial ground. I am fully aware that a large majority of the people have for a long time considered the Wilson as the *ne plus ultra* of that delicious fruit, and yet both you and Mr. Gulley will readily admit that it is a poor, sour berry, and can hardly be classed any better than third rate. It is hardy, productive, and ships well, and that is all any one can say in its favor. I see by Mr. Gulley's article that some of Rip Van Winkle's race are still abroad. Is it not the duty of all fruit-growers to improve the taste of the people in every possible way, and more particularly so in small fruit?

JEREMIAH BROWN.

Battle Creek, July 14, 1879.

AND STILL A THIRD.

President J. M. Smith of the Wisconsin State Horticultural Society hasn't found any strawberry yet to supersede the Wilson in his somewhat extensive plantations; and he tells the Western Rural that he is "disgusted" when he thinks how much money and time he has spent during the past twenty years in a vain effort in this direction. He estimates that the cost of the latest experiment—with certain of the newer varieties set out last season, including Duncan, Kentucky, Prouty's, Red Jacket, Crescent, Seth Boyden, and "others not worth naming"—was \$150 at least. By this he means that "if the land had been planted to Wilson and cared for in the same manner it would have produced that amount more in value of fruit than it did." The Crescent is the only kind that made any sort of show in comparison with the standard, and though not yet convinced that it is not a pistillate variety ("which would prove a very serious objection to it for general cultivation") he esteems it highly enough to have set half an acre for next year. Kentucky gave a beautiful dish after Wilson became small, and so is continued for trial a little further; the rest serve as green manure for fresh Wilsons, having been plowed under to make room for that old standby.

YIELD OF FRUIT.

Mr. O. B. Galusha, Morris, Ill., who raised this year about 12,000 quarts of strawberries of some thirty varieties, reports to The Western Rural that the Charles Downing netted him more money than any other, "because the vines take care of themselves, do not mat on the ground along the rows so as to prevent full development of the fruit, are exceedingly productive, holding out longer in bearing, producing large berries to the last. Berry of moderate firmness (fair shipper) and of fair, not rich flavor." Of Crescent the following is said: "Largest fair berries $3\frac{1}{2}$ inches round; brilliant color; best quality for table, and moderately firm where kept in narrow rows; vines the most productive of any known variety, blossoms fertilize more completely when every third or fourth row is planted with Wilson's or (which is better) Charles Downing."

THE MONARCH.

We consider Monarch of the West one of the best of the well-tested strawberries, on account of its great vigor, hardiness, productiveness, size and quality of fruit. Its color is too light—its greatest defect. Rev. E. P. Roe says: "I sent a crate of Monarchs to a leading hotel on Broadway. The proprietor immediately telegraphed, 'Send darker, riper berries.' But as the green, sour things were on hand, he thought he would try to get them eaten. They were eaten, with praise between every mouthful, and before night he again telegraphed, 'Send more of the same kind.' " This berry thrives over the whole country. In California many of the large planters will have nothing else. Nursery agents working about Buffalo bring in orders for Monarchs almost exclusively, claiming that the prices paid for the fruit there are enough higher to pay for the picking and marketing. It appears to do well on sand or clay, and with any manner of culture.—*N. Y. Tribune.*

NOTES ON THE NEWER STRAWBERRIES.

The editor of "The Farm" received a crate containing ten varieties of strawberries on the evening of the 21st ult. from Geo. W. Bridgman, of Berrien county. They were taken from the vines on the 20th, and about half a box of each variety was preserved until the evening of the 23d for the purpose of testing their keeping qualities.

The following list comprises the varieties sent, with a concise statement in tabular form of an estimate upon the quality when received, and keeping quality as judged by specimens sent:

VARIETIES.	Quality for Table Use.	Standing as Keepers.
1. Cumberland Triumph	1st best.	10th poorest
2. Prouty	5th.	5th.
3. President Wilder	Equal to No. 5.	6th.
4. Cinderella	2d.	4th.
5. Boyden No. 30	4th.	7th.
6. Monarch	Same as No. 4.	9th.
7. Jucunda	Poorest.	3d.
8. Kentucky	6th.	8th.
9. Champion	Same grade as 7.	1st best.
10. Black Defiance	3d.	2d.

The table may simply be useful in comparison with other tests made this season, and we would gladly publish the estimates of others upon these and other varieties.—*Detroit Free Press*.

STRAWBERRY EXPERIENCE IN MANISTEE.

Charles Hurd of Manistee, a successful grower, relates, under date of September 5th, 1879, his experience which coming from so far north, and from a careful experimenter, we take pleasure in employing here:

First in season of ripening came the Nicanor, an old and not very popular sort. It did not have a fair trial, because the bed was allowed to go to runners all last season,—as did all the varieties in my sample beds,—which was a severe drain upon their vitality. It began to ripen fully ten days before the Wilson, and continued in bearing several days after the Wilson was entirely gone. The fruit was not large, but of good size, many single berries measuring three inches in circumference. It is very beautiful in form and color, very firm, and of most excellent flavor. This season it bore a large crop, and I believe with good culture it can be made a very profitable market berry. It will stand transportation better than the Wilson. I shall plant it quite extensively in the spring.

Next in order, but ripening with the Nicanor, came the Duchesse. This is a rank grower, and excellent bearer. The fruit is large, of good shape and color, and of fine quality. It is considered by most fruit growers as a very promising early sort. I like it very much, and shall give it a large place on my grounds.

Then came the Wilson, the most popular berry in existence. To write adversely of it is to subject ones self to ridicule, but I am simply telling how it has succeeded with me. It will produce a good crop on almost any soil, and will readily respond to high culture. It produces a large number of small berries and a few large ones. It turns red long before it is ripe, and, hence, is considered a good market berry. It is too sour to eat until very ripe, and then is good, but not to be compared to many others. When fully ripe it bruises readily, and fades and changes color and molds quicker than most other sorts. With me it never has borne more than the Charles Downing, and this season

did not bear more than two-thirds as much on the same ground and with the same culture. It wilted while the Downing kept green; the fruit was very small and it did not stand the drought well. It brought in market from two to six cents less per quart than any other kind on my grounds. It has enjoyed a great reputation, but must yield to other well-tried sorts.

The Crescent Seedling is fully as early as the Wilson, and is said to be an enormous bearer, producing 15,000 quarts to the acre. I have not fruited it largely, but shall do so next season. If its tendency to multiply itself is any indication of its fruitfulness, it must be a marvel. From five plants set in the spring, last year, I obtained 353 new sets. The plants completely covered the ground, leaving no room for weeds to get in. In quality it is not the best, and is a little soft for distant market. It is pistillate, and must be planted near some other perfect kind.

The Cumberland Triumph is the largest and most *delicately* flavored berry on my grounds. It is a berry to delight the amateur, is a rank grower and an abundant bearer. A few days since I received a letter from Mr. Miller, the originator, in which he says that from 1 $\frac{1}{4}$ acres this season he obtained 270 bushels. I consider it among the finest cultivated.

Captain Jack is a fine grower and a *great* bearer. The fruit is of good size, firm, and not of first quality.

Pronty's Seedling literally covered the ground with long, glossy, handsome berries of large size and of excellent flavor. It was admired by all who saw it fruiting on my grounds this season. It is firm, and commands a high price in market. The new plants did not stand the drought quite as well as some others, but it looks well.

My sample beds this year contain two rows of each sort, new and old, and all must stand the same test. My only object is to obtain the best, and I shall discard those that do not come up to the required standard.

The Monarch of the West is one of the best berries that I cultivate, and ought to be planted by every lover of large luscious fruit. I think I shall place it second on my list.

Last season I wrote of Kerr's Late Prolific as follows: "Its only fault seems to be that it bears a *host* of *good size* berries, but no enormous ones." I wish to modify this now and say, after another year's experience with it, that it bears a "*host*" of *very large* berries, of excellent flavor. I consider it one of the best in cultivation.

The Kentucky is the finest late berry that I know of in a good season; but with such a season as this, it is a shy bearer, and ripens its fruit with the Wilson.

Seth Boyden No. 30 is a great berry, and has few equals. It is the sweetest of all large berries.

I fear you will not give me space to speak of the Jucunda, Col. Cheney, Triomphe De Gand, and numerous other varieties, and so will close with a description of the Charles Downing. I have fruited this variety for four years, and have watched it carefully. I have uniformly planted it by the side of the Wilson, and have given them both the same care. This season I have it also by the side of the Jucunda, Col. Cheney, Nicanor, and Monarch of the West, and it has invariably surpassed them all. With ordinary culture it will do as well as the Wilson, and often better; but under good treatment I believe it has no superior. On my grounds it has *never* borne *less* than the Wilson, and this year it has borne at least a *third* more. It has survived the long drought, while the Wilson has died. It begins to ripen almost as soon as the Wilson, and continues in bearing long after the other is gone. The berries are larger

than the Wilson, all the time, and continue the size as long as there are any. It produces very few small berries, but a heavy crop of very large, handsome, showy, highly flavored fruit. Taken to market with the Wilson, it is selected first. Two years ago it sold for twenty cents, and the Wilson for twelve. This season it sold for from twelve to twenty cents, and the Wilson from eight to twelve. I do not say that the Wilson can not *be made* to produce more than the Charles Downing, although I very much doubt it, but I do say that it does *not* do it. I believe it to be the best strawberry now grown; although some of the new kinds, as Sharpless and Forest Rose, are wonderful berries, but they have not yet been fully tested. *It is the only strawberry upon which no unfavorable report has ever been heard.* I shall plant more largely of this berry than all others; shall carefully note its progress, and if I have occasion to change my mind, will do so in the future.

A VISIT TO DUNKLEY'S.

Dunkley is a market gardener, living in Kalamazoo, Michigan. Everybody knows him there. I might call him Mr. Dunkley, but I know he will consider it no offense if I call him just by the name that his fame gives him. We had heard that at Dunkley's a plan of irrigation had been adopted, which had been eminently successful in many ways, and inspired by a desire for increased knowledge in matters of horticulture, we took the train from Grand Rapids the other morning, to spend the day in search of new facts in the irrigation line, at Kalamazoo.

Perhaps it will be well to explain very briefly some conditions: Firstly, Kalamazoo is fifty miles from Grand Rapids—a two hour's ride, as trains move in Michigan. It is the largest village in the world, beautiful in its embellishment, and thrifty in its enterprise. It is the center of a good fruit region, and progressive horticulture, in its broadest sense, is a matter of reasonable pride on the part of the residents. Secondly, by "we" I mean a party of five gentlemen, whose names have all appeared in the public prints as connected with the Michigan State Pomological Society. This last compound statement I trust will be sufficient surety for the truthfulness of the concise statements which I am about to make as the journalistic representative of the party.

Dunkley's place is a mile from the center of the village, and through the courtesy of a son of the proprietor, we were piloted about the place. A force of several hands were picking strawberries from rows of very vigorous plants, and, as we opened the vines in advance of the pickers, a more delightful strawberry prospect, we all agreed, we had never seen. The varieties were: Monarch, Seneca Chief, and Wilson, and under the system of irrigation employed, they were just prime for market after all other berries in the vicinity had ripened and were gone, save a few insignificant boxes that could in no way affect the market.

It took us a very short time to learn the following facts:

1st. Under the system practiced by Dunkley, his berries were two weeks later than the general crop in the vicinity, and they were thrown upon the market when prices were remunerative.

2d. His vines were vigorous and independent of rains, so that every berry that set could reach perfection in size and flavor.

3d. The necessity of picking every day or every other day for the sake of

saving a few berries that would otherwise become over-ripe, was entirely obviated, and a picking once in four or five days would be very large and a rapid gathering at the least possible outlay, was accomplished.

4th. The fruit becoming more mature without losing its firmness, was more luscious, and yet scarcely anything was lost in the character which every berry picked for market must have to hold its shape until sold.

5th. The vigorous vines gave protection to the berries from the direct rays of our very hot meridian sun, which preserved even those which were over-ripe from so soon losing flavor.

We were invited to inspect the simple method of irrigation and while walking to the fountain head we had ample opportunity to view the vegetable garden, which we found in a most flourishing condition. The cabbages and tomatoes particularly attracted our attention, because of their forwardness.

"How's this?" we inquired; "your method of irrigation puts back your strawberries but puts ahead your vegetables."

"Cabbages," he replied, "are advanced, to be sure, because it is leaves we are after, and our method tends to a very rapid growth of foliage. But with tomatoes I need to make this further explanation; the fruit develops in size very rapidly, but should we continue to regularly apply our water, the ripening process would be retarded the same as with strawberries; but as soon as the fruit is of fair size, we withhold the water, and they ripen rapidly. We have found that there is a good deal of study connected with properly and economically employing irrigation in the garden." So we thought, after witnessing this anomalous state of things.

"We water," said he, "only to supplement the rain. If the season is a wet one, we employ our artificial system little or not at all, and in such seasons get no profit from our investments; but generally some time during the season we get a drouth that shortens some crop, then we irrigate that crop, and have the advantage of our neighboring gardeners."

The fountain supply from which the water was taken we found to be a spring dammed up at a point which was a little higher than most of the garden. The water was conveyed in a wooden conduit made of two-inch plank, rendered water-tight by the use of coal-tar. It was, perhaps, eight inches wide and a foot deep. At intervals of about eight feet auger holes were bored near the top of the conductor. The rows of vegetables and vines run at right angles to the line of the conductor, and are so arranged that each alternate space between the rows comes opposite a hole in the conductor. When the water is wanted in any particular locality, a cut-off is made just beyond the opening at this point, and the water being let on at the fountain-head pours out in a nice stream and follows down the row. The surface of the ground has been carefully graded, so that the progress of a stream of water let on is slow, giving plenty of chance for the water to settle about the roots of the plants. Having once secured a place with the natural arrangement of a spring at some point higher than the general surface, this process of irrigation is an inexpensive one.

The question has often been asked me whether a wind-mill could not be successfully employed in irrigating fields of strawberries, and, having had no experience, I have ventured the opinion that a wind-mill might be profitably employed for this purpose. But when I saw the amount of water actually used here to irrigate a small garden, I saw that an ordinary wind-mill would be a small affair to accomplish such results. Upon inquiry, I found that Mr. Dunkley had first tried a wind-mill and found it entirely inadequate to accomplish his purpose.

A word regarding the management of the strawberry fields at this place. After the berries are removed, the ground between the rows is thoroughly cultivated through the remainder of the season; the vines run together in matted rows, and in this condition go into winter. Early in spring a good coating of long stable manure is given. That which has begun to decompose a little, or that in the making of which short wheat straw has been used, is preferred. This manure is spread evenly over the surface and the vines make their way through it easily. By the time the berries are ready to be picked, it is all down close to the ground between the rows. The covering is placed on in the spring to retard the blossoming as well as to preserve from evaporation the water that is employed in irrigating the rows.

The Wilson strawberry is talked about as a sour fruit fit for market but not fit to eat. Dunkley's Wilsons were not only fit for market, but delicious to the taste,—but they were ripe. A ripe Wilson is rarely seen in any market, and the hue and cry about it as a poor, sour berry, is founded upon a misapprehension of facts. A luscious strawberry must have the acid in it, to begin with, but it must be tempered by a thorough ripening process. Many varieties far inferior to the Wilson, rank higher among consumers, because in the imperfectly ripened state in which they are put upon the market, they are less acid. Dunkley's Wilsons were as good as any Cumberland Triumphs or Black Defiances I ever tasted, because they were ripened slowly upon good soil and perfected in flavor before being taken from the vines.

After testing the quality of all the varieties raised at Dunkley's, we drove rapidly through the streets of the big village, and were delighted with the many beautiful homes with tasty surroundings, that we saw everywhere, and could see no reason why happiness could not exist in nearly every family, if Dunkley could only raise strawberries enough to supply them all.

Grand Rapids, Mich.

S. Q. LENT.

PLANTING RASPBERRIES DEEPLY.

N. Ohmer, a large fruit grower of Dayton, Ohio, whose name is familiar in all horticultural circles, thus writes concerning the planting of raspberries:

Three to four inches deep is how I plant my black raspberries, and if you think that is too deep, or too shallow, come and see about thirteen acres of Gregg raspberries planted that depth, that will make you wish you were the owner of them; finer plants I never saw. Though the weather has been extremely dry, my plants have made excellent growth and produced a big crop of magnificent fruit. I find by planting deep, and pinching back the canes when not to exceed two feet in height, every cane throws out strong laterals and stands erect, and supporting its fruit as effectually as if they had been trained to stakes or wire, saving much expense and labor. I have in the last twenty-one years practiced all systems of growing the raspberry, and am fully convinced that my present practice is by far the best.

THE SNYDER BLACKBERRY.

Charles Hurd, of Manistee, gives the following note concerning the Snyder: I have cultivated it for three years, and thus far find that it fully sustains its high reputation for hardiness, early and prolific bearing.

I have Wilson's Early and the Kittatinny growing by its side. Last winter the Wilson killed down to the ground, the Kittatinny within two feet of the ground, while the Snyder was sound to the tops on canes from four to five feet in length. With me it has never killed back in the least, but has blossomed full to the very tips of the long canes. Again, it bears heavily while young, producing as much fruit the next season after setting as the Kittatinny will in three years. Besides, it bears a heavy crop every year. It certainly is the most productive blackberry I have ever seen, the bushes being literally covered with fruit of good size and excellent flavor. It is somewhat impatient of moist soil, where it will mature its fruit larger than in dry soil.

It is a rank grower even under ordinary culture, but will endure and repay high culture.

I shall plant largely of it and Taylor's Prolific—the latter of which is claimed to be very hardy and prolific—this fall, as I believe them both to be the best now cultivated.

QUINCES AND THEIR CULTIVATION.

Why is it that the quince, which is as hardy and as well adapted to our soil and climate as the apple, is comparatively scarce, and commands on the average three or four times as much in our markets? There is seldom, if ever, a "glut" in the market, and prices are uniformly remunerative, bringing the producers for handsome fruit from \$3 to \$4 a bushel in New York and Boston almost every season. The apple, in the fresh or dried state, enters into the annual supplies of almost every family, as cider, vinegar, jelly, sauce, and other preparations, and is also a profitable feed for our domestic animals, while not one family in ten knows anything of quince preserves and jellies. It is really one of the most appetizing and wholesome of the sweetmeats found among the stores of our housewives; and the cultivation of this fruit should be greatly extended. We know of no fruit that promises so good returns as this to the intelligent fruit-grower. If we look at the quince plantations, as we ordinarily find them, they are few and far between in the farming districts. The popular fancy is that the bush flourishes best in a damp soil, and if there be an undrained swale on the premises, we may safely look for the quince bushes there. More frequently than otherwise, they stand in the grass, receive no cultivation, and after a few brief years die, either from stagnant water or the attacks of the borer. Under such treatment the trees have no chance to bear fruit, and make themselves profitable. The quince wants a deep, rich, rather moist soil, but it should always be well drained. Good corn land, that will bear maximum crops of grain, will bear good quinces. No fruit pays better for thorough cultivation, and the ground should always be kept under the spade or plow, and should, if we want abundant fruit, receive a good dressing of manure every season. The bush, or tree, requires very little other care than the occasional thinnings out of the branches if they crowd too closely. The thinning of the fruit, where it sets too abundantly, will increase the size and profitability of the crop that remains. The fruit, as well as the flower, is quite ornamental, and an attractive feature in October and November. The "apple," or "orange quince," is by far the best variety. It ripens earlier, and brings the best price in the market. The quince is easily propa-

gated from cuttings, and this is the simplest and best method of multiplying a desirable variety. Cuttings put down in the spring, in a moist, well drained soil, a little shaded, will root about as readily as the currant. In making a plantation the young trees should be set at least ten feet apart.—*Practical Farmer*.

THE QUINCE PROFITABLE.

We have confidence in the quince, and shall extend our orchard. This fruit is comparatively scarce and held at high rates, for the reason that many sections of the country are not favorable for its culture. The average price for choice quinces is from \$2 to \$3 per bushel. I have known them to yield at the rate of 300 bushels per acre, but they were not grown in fence-corners nor among the roots of shade trees, as is the common practice. We manure the quince tree more frequently and heavily than any other, keeping the soil loose and cool with an annual dressing of coal ashes and salt, and with thorough, but shallow cultivation. Without care the quince makes an awkward bush, with numerous trunks, barren of fruit branches except at the top. We train in tree-form, permitting no branches within two feet of the ground, keeping the head compact and in good proportion by cutting back the leading shoots annually, taking care not to cut out the short twigs, the fruit spurs, that are numerous after the first few years planted. We prefer a clayey soil, but have seen the quince thrive in sandy loam—the borer troubles it more in the latter. With good treatment the quince should bear the fourth year, seldom failing thereafter. As this hardy tree begins growth early in the spring it should be among the first planted. If trees have been grafted on apple roots such should be removed, as the quince always strikes roots of its own above, and sprouts of the apple will be detrimental.

CHAS. A. GREEN.

Clifton, N. Y.

PLANTING AND TRANSPLANTING.

REVIVING TREES.

The following query and reply are from the Detroit Free Press:

I received a lot of apple nursery trees from over the railroad which had been detained too long on the road or were poorly packed. At any rate, they were quite shriveled, and not knowing what else to do, I planted them out as soon as I could, giving them a liberal pouring of water about the roots and then mulched them heavily. But the dry winds seemed to suck out what little vitality there was left and they are all dead. Now, my query to you is, how could I have saved them, or was that impossible? I inquire that I may know better next time.

Vestaburg P. O.

J. TALBOT.

You did well, but perhaps you might have done better. If it was possible to save those trees, the best plan would have been to submerge them in water, root and branch, until the shrivel was all out of the bark. A number of years ago we saved a consignment of peach trees that looked as if the life was all dried out of them by plunging them in an old cistern and allowing them to remain there for nearly a week. Then they were planted out and mulched, as you did, and the bodies were shaded for a time by a broad board pointed and driven in the ground on the south side, close to the tree. This, however, is not very profitable business, when it is possible to get trees at living rates at a nursery near by.

LAYING OUT AN ORCHARD.

Where I wanted the first row I stretched a line, and then with a measuring rod as long as I wanted the trees apart, measured and set them by the line at precisely the proper distance. Next, at one end of the orchard ground, and by the aid of a square, I stretched the line perpendicularly to the row already set, and planted a row in that direction. At the other end of the grounds I did likewise. Then I commenced at the first row set, counted off three or four rows, and planted another row. I continued to draw the line and set rows in this last direction till all were done. It will be seen that I always set by the line one way, and that after the first two long rows were planted, the trees in them answered as stakes to sight the other way. Thus I planted an orchard of 15 rows, with 25 trees in a row, and they are in rows in every direction.—*Cor. Farmers' World.*

PRUNING AT TRANSPLANTATION.

This is a mooted question, but long experience shows that whatever theory may teach, it is safe to shorten back the branches at the time of planting; this, by reducing the number of leaf-buds, and consequently the number of leaves, reduces their evaporating power while the tree is forming new roots and getting used to its new home. A good rule, as far as we can make a rule, is to cut back the young shoots to two or three buds at the bases and where shoots are too close, cut out some of them altogether.

P. BARRY.

Rochester, N. Y.

TRANSPLANTING FRUIT TREES.

Occasionally we hear it said in various sections of the west that such and such regions are not suitable for growing fruit. An examination of the soil does not disclose any reason for such statements, and otherwise the cause is not apparent. The fact is people are ever looking away from themselves for the cause of their failures, whenever they meet with them.

A friend on the prairie in one of the more northern counties of Illinois,

years ago made a failure of his apple orchard, though he selected the varieties which were good bearers in the same latitude. He decided that his section was a failure in fruit. A gentleman well versed in transplanting and acclimation of trees, learning where his trees grew, assured him that the fault was in transplanting them from a nursery, far south of his own location, in the fall season. He tested this theory with a few trees of the same kind from the same nursery, but planted them in the spring, and to his surprise they flourished and bore fruit abundantly. This kind of mistake is frequently made, and the locality, rather than the man, is charged with the cause of the failure. Transplanting trees to a colder climate should always be done in the spring, and to a warmer climate than where grown in fall. This is true, whether done by seeds, cions or otherwise.—*Indiana Farmer*.

PRUNING.

A WORD OF ADVICE.

Pruning requires careful and diligent study, and if done properly and intelligently will prolong the life and usefulness of the orchard as much as any one thing.

The saw and ax should be abolished and forbidden to enter the orchard, and the knife should be used sparingly, only to cut out here and there a limb or sprout to let in the light. Every orchardist should have the form of his trees clearly pictured in his mind, and the pruning be only such as is needed to obtain that ideal pictured in his mind. No specific instruction can be given by the most experienced pomologist or orchardist, as the soil, location, temperature and elevation has much effect on the trees, and also there is much difference in the habits of the growth of different varieties, some growing quite slender, others stocky, some spreading, others quite close. The best time to prune is in the month of December, although it may be done at any time while the frost is in the ground or the tree is in the dormant state, except just before the sap starts upon its upward course. Pruning can be done successfully in the summer if done at the right time, but just when the time comes is not always easily determined, as so much depends upon the growth of the tree, season, location, sterility or richness of the soil. Very much of the wasteful pruning, or I should say butchering, can be avoided by rubbing off here and there a bud with the fingers during the growing season. By this means the sap is directed to other buds and no wood is wasted, and much of the labor which is now used to butcher the trees, pile up the brush and burn it, would be saved to the orchardist, but the greatest saving would be in the growth of wood which is wasted. This system of pruning is being adopted more or less by our most intelligent and thoughtful pomologists throughout the country, but much care needs to be exercised, careful study had in forming the top of our ideal tree, that we do not injure its future usefulness. The heads should be trained low and not be made for

sky scrapers, for many reasons, among the most important of which is the gathering of the fruit, which can be more easily and better done.—*E. F. Guild.*

IN PRUNING STUDY YOUR VARIETIES.

The first advantage is that you can form just such a top on your own trees as you wish, by cutting away such limbs as you don't want and shortening those that are getting too long, making them spread more and thinning out where they grow too thick and trimming up those that are inclined to droop and hang too low. But in order to do this successfully, you want to study the nature of the tree. To illustrate, I will give some examples of familiar trees.

Take a yellow Newtown Pippin apple tree. When it is young and thrifty it is inclined to shoot up very tall, with the branches close together, and, when the tree gets in full bearing, the top will be bent and twisted all out of shape by the weight of the fruit, and frequently the tree will be broken down and spoiled. Or if it be not broken, the long limbs will remain bent over and throw out a great many shoots from the upper sides of the limbs, and thus make a thick and very ugly top. Now, by proper pruning at the right time, we may avoid this, and this is the way to do it:—Cut off all your limbs and top of your trees when setting out, and then prune every year, so as to keep the top in good shape, by cutting back those shoots that are growing too tall and thus make them spread out more, and thin out where they get too thick, and never suffer a tree to fork. When you see two or more branches of equal size growing out from the main stem, cut off all but one and that from the main tree. Let the branches grow up out from the sides, at proper distances from each other, so they will have plenty of room to bear and mature fruit, and, if properly shortened in, they will bear their crop of fruit well, without breaking or bending out of shape.

The Yellow Belleflower is of the opposite class of trees, and needs a different treatment in some respects. Such trees are inclined to form a very thick top, which grows low and spreading, and hangs too low if not trained upward. Such trees need a good deal of thinning out among small branches, and in such a way as to encourage the branches to grow upward.

Now, if you commence pruning your trees while young and follow it up every year (as you should), in a proper way, you can form just such a top as you want. If your tree needs spreading out, cut the young shoots off just above a bud on the outside of the shoot, and if you want to train the tree upward, leave a bud on the upper side of the limb where you cut it off. These rules will apply to all kinds of fruit and ornamental trees and shrubbery.—*Farmer's Advocate.*

ON PRUNING EVERGREENS.

Many people do not understand that evergreen trees bear pruning as well as most other kinds, and in many cases need it quite as much. We often see evergreens quite too tall for their location, and making a dwelling seem too low by contrast. Others are too spreading, their branches obstructing a pathway or

shutting out a good view. Where it is desirable to check the height of such trees as the Norway spruce, cut off the tip or leading shoot before it attains the full height desired; then two or three leaders will probably be developed in a year or two and the tree will assume a more dense and dwarfish form. At the same time all the side branches can be shortened as much as is desired. If done before the growth takes place in spring, new buds will be formed at the cut and several small branches in the place of each larger one removed.

Pines can also be shortened in, but these only form new shoots at the joints or whirls, hence it is best to cut at one of these. A better way still, with young pines, is to go over them in the latter part of spring, when the new shoots have just pushed forth and are very tender and brittle, and break off with the fingers the center shoot in each whirl, and the others also if the growth needs to be severely checked. Hemlock and arbor vitæ can be pruned with knife or shears as closely as desired, and hedges or screens of all kinds should be closely clipped every spring before new growth begins.

M. B. BATEHAM.

ANOTHER UPON THE SAME.

We have been in the practice for many years of pruning evergreens as freely as deciduous trees, and have found great advantage in the practice, wherever a better or more symmetrical form was desirable. They may be cut freely if the growth of the tree is vigorous, but the same object may be reached with moderate growers by pinching off the shoots early in the season. Small, distorted trees, which were unfit for sale in the nursery, have been changed in a few years into objects of symmetry and beauty by both modes of treatment combined. Josiah Hoopes states, in a late number of the Tribune, that early in spring he cuts his evergreens freely into shape without regard to buds or anything else. Pines, with their scanty lateral buds, are easily made to produce regular conical heads. The fault with some of the pines is their thin growth; with a little attention we find that this fault may be corrected by early pinching back the new shoots. Take the Scotch or Austrian pine, for example, or such specimens as have long and slender shoots. When they have grown two or three inches early in the season, pinch off all the ends. They will form new buds, and an open head may be thus changed into a dense and compact one. The natural, graceful form should be preserved to a certain extent, and the tree not be changed to mathematical stiffness.

JOHN J. THOMAS.

FANCY FRUIT-TREE TRAINING.

It is only in mild and genial climates that it is worth while to give artificial forms to trees. In such places growth is favored, and the tree goes on making wood without stopping to the slower work and greater expenditure of refined material that is involved in the formation and storing of fruit buds. Bending of the branches in the full flow of their growth, and tying them down, checks the wood growth in time to favor fruitage. There are still stronger reasons for the applicability of such training where the climate or the soil or both are uncongenial. In such locations there is a constant liability to loss of branches by drying or freezing or obscure blights. The cultivator soon tires of training shoots to see them perish. He improves the soil by

drainage or otherwise as well as he can, gives what shelter he can from cold dry winds, plants the very hardiest and most enduring and fruitful sorts that he can find by observing through his neighborhood, and then lets them have their own way in shaping their growth, especially avoiding every sort of stimulus to unseasonable growth which cannot fully ripen.

The quince is a tree, or rather a bush, that endures the trials of our climate very illy. We can give it the rich open mould that its fibrous roots want, and we can keep them above the line of stagnant water, but the parching winds that occasionally sweep almost our whole territory are too much for its open-textured bark and soft wood. Within the influence of the Gulf Stream vapor on the east coast and probably in the humid air and sheltered valleys of Oregon and Washington Territory it may prove reliable. A grower—U. B., West Creek, N. J.—describes in the *Bricksburg Times and Journal* how he has secured a good crop on part of his trees. He let only one stem grow, and thinned or stopped both shoots and first blossoms until the tree had great vigor. He then bent and tied down the branches in August. He applied lime slaked with brine to the soil, and earthed up the collar. This is good tre atment for a good locality. In England they train currant bushes to single stems. In nearly all parts of our country it would be as vain and useless to train the quince in that way as the currant. There is in that case only one string to the bow—which is sure to give way within two or three years, and then what is there left?—*N. Y. Tribune*.

MULCHING AND CULTIVATION.

THE VALUE OF LEAVES.

The time has come when the value of fallen leaves for littering stables, mulching the ground and protecting tender plants is better understood. For littering stables they have one great advantage over straw. Their broad surface and the stratified position in which they always arrange themselves not only exclude cold currents of air, but render them more perfect non-conductors, and exclude the cold better than other similar substances. They make a fine soft bedding for horses; and as a component part of manure are not so coarse as straw and soon decay, giving a fine texture to the compost they form. They impart similar advantages when used as a mulch, namely, lightness of covering and perfect protection. For covering tender plants they are peculiarly fitted, being always so dry as not to suffocate or rot the plant, and the thin plates of air interposed between them entirely exclude the frost if sufficient depth is given.

A gardener has had remarkable success with roses, the tender kind, which he keeps through the winter in open ground by a thorough covering with leaves. When a foot in thickness, with a few branches of evergreens on the top to prevent them blowing away, no frost can penetrate them. Many farmers have a large supply of leaves in their woods and hollow places; the wind will sometimes sweep them into heaps two or three feet in thickness, and they may be

scooped up with large baskets and drawn in wagon boxes with great facility. In any woods they are easily and rapidly raked into heaps for the same purpose. It often happens that when there is no snow upon the ground in winter farmers can draw leaves better than any other time. In portions of the country where snow does not fall and where forest leaves are abundant, the work should not be omitted.

The scarcity of fodder and the consequent value of straw renders it especially desirable at the present time to save and use, to the best advantage, everything of the kind. There is nothing better than leaves for protecting strawberry and flower beds, for covering asparagus and for mulching all kinds of plants.

J. P. THOMPSON.

Detroit, Michigan.

MULCH, A GOOD THING.

Mulching rarely receives attention except from those whose long experience has clearly indicated the necessity of preserving the roots at a regular medium temperature, avoiding alike excess of drought and moisture. The necessity for it is equal—Winter and Summer—in Winter to guard against sudden extremes of temperature; in Summer, as protection from hot sun. Be careful not to bury the roots in a mulch several inches deep, as this would certainly injure the tree, and instances are known of specimens killed outright—victims of too much kindness. The material (which may be anything light, open and porous) should extend, in a newly planted tree, as far as the roots spread instead of being heaped close around the stem.—*N. Y. Tribune.*

ORCHARDS IN GRASS.

The New England Farmer gives the experience of a well-known orchardist of West Millbury, Mass., upon orchards and their care, as follows:

“Mr. Waters has several large orchards on his farm, and says that he believes he has sold more good apples from his trees, according to the time they have been in bearing, than any man in his county, and he has never put a plow into the ground since the trees have been large enough to bear. His trees are trimmed but very little, and the limbs bend down and lie on the ground under their load of fruit, so they are supported at both ends. No limbs are ever cut off to allow teams to pass under, nor does the fruit blow off nearly as freely as when the growth is forced by trimming into the upper parts of the tree. Plowing, he says, encourages excessive growth for a year or two, and necessitates subsequent trimming to remove the excess, but under his system no more growth is made than is necessary for carrying and perfecting the fruit. He top-dresses the land under the trees and as far as the limbs shade the ground, once every three years, and *never cuts the grass*, but allows it to grow up and fall down and cover the manure, thus keeping the soil cool and moist at all times. He cultivates his orchard solely for the fruit, and obtains fruit in abundance and of the finest quality. Mr. Waters has an excellent soil for apples, but no better than that of some of his neighbors, whose orchards are beginning to decay under the ordinary methods of treatment, while his are growing more valuable and productive every year.

CULTIVATING PEACH ORCHARDS.

It puts me out of patience to hear any one whose opinion has any weight deprecate or discourage in any way the most thorough cultivation.

I have an orchard which for 18 years has been plowed annually, to the depth of five or six inches, some time in April or May; then in about two weeks when the weeds have sprung up, a heavy harrow has been passed over both ways. After this, when the weeds were stronger and larger, a two-horse cultivator set to run four or five inches in depth, has been passed over from three to five times. This is each season's cultivation, and I suppose, according to many writers' views, that my trees ought to have been dead long ago; and yet I believe there are more peaches of the best quality grown on the same number of trees than in any other orchard in the state. Trees 18 years old have made a growth of from one to three feet the present season, 1878, while bearing a heavy crop.

So far as my observation extends, those orchards best cultivated pay the best. Theoretically, mutilating and tearing the roots while in a growing state, ought to enfeeble, or kill outright, any tree whose roots are so near the surface as are those of the peach. May not the aerating and pulverizing the soil more than compensate for the loss of roots? At any rate the trees thrive admirably under the severest cultivation. What would be the use of a smoothing harrow, as you suggest, among red roots, pig-weeds and rag-weeds, after they had attained any size? If the theory is correct, why not apply it to the cultivation of corn? Every good farmer knows that the more thorough the cultivation, the better the chances are for a good crop; and further, the cultivation must be done at the season of the greatest growth, when the ground is filled with the tender rootlets, and a square inch cannot be moved without mutilating more or less of them.

Too many people have the idea that when they have set out the trees for an orchard their duty has ceased, and the trees ought to grow luxuriantly and bear abundantly, and of the best quality, without further care, except, perhaps, to seed down, or as some suggest, sow buckwheat or some other small grain. I would as soon think of sowing buckwheat among my corn to ensure a better crop. Men say this farmer or that farmer is lucky and has good crops every year, when the simple fact is, he is a thorough cultivator. It is just the same with the orchardist—at least it is true in this vicinity.

C. ENGLE.

Paw Paw, Van Buren County, Mich.

FERTILIZERS.

SOOT IN THE GARDEN.

Those who have soot, either of wood or bituminous coal, should carefully save it for use in the garden. It is valuable for the ammonia it contains, and also for its power of re-absorbing ammonia. It is simply charcoal (carbon) in an extremely divided state, but from the creosote it contains is useful in de-

stroying insects, and is at the same time valuable as a fertilizer for all garden crops. It must not be mixed with lime else its ammonia will be dissipated, but if the soil is dry and hungry a little salt may be used with it. Soot steeped in water and allowed to stand and settle for a day or two is also a most excellent fertilizer for house plants, possessing precisely the same qualities that the parings of horses' hoofs do. For flowers out of doors it is especially valuable since it may be easily applied, and tends to increase the vividness of the bloom, and, mixed with salt, it is a most excellent fertilizer for asparagus, onions, cabbage, etc., in connection with compost, in the proportion of one quart of salt to six quarts of soot. For two bushels of compost this quantity makes a heavy dressing for each square rod to be worked in next the surface of the soil.

ROAD DUST FOR LAWNS.

I recently gave my lawn its fall coat of road dust. I have been practicing this with the most gratifying success for years. There is much in knowing how to manage. Fortunately I have a much traveled road passing by my premises, making it convenient to procure the dust,—plenty of it, and highly charged with horse dung. I scrape into heaps with a hoe, and remove with wheelbarrows to the place where it is to be applied, which latter I do with the coal scuttle. After some practice it can be pretty evenly distributed in this way. I follow with a wooden rake with short, strong teeth. By raking it well I get the dust more equally distributed, and well down on the ground. By doing the work now, the grass will get some effect before winter, and this stimulus will help to sustain it against the frost, besides affording a coat of protection for the roots. In spring the grass will start finely. The time of day for gathering and applying the dust is worth considering. It should be done early in the morning when it is damp, which prevents it from flying while being handled.

Two bushels to an area of ten feet square is a good application, and should be adopted where the grass is light and the soil poor. Less will be sufficient on a good turf. Let it not be supposed, however, that more than the above heavy application will be hurtful. I have applied it nearly an inch thick in some places to raise the ground where it had settled, raking up the grass well after applying, and here grew afterward the best grass. Where much dust is required, it is a safe and good way to gather it during the summer, so as not to fail in securing it should the weather happen to be wet in the fall, or heavy rains wash away the dust.—*F. G. in Country Gentleman.*

PRESERVING AND MARKETING.

OVER-PRODUCTION.

If any one will take the trouble to look into the facts about the comparative price of the different kinds of fruit grown in this country they will see how foolish is the idea that the country is in danger of being overstocked.

Take the price of apples, peaches, pears, strawberries, grapes, etc., and for forty years, dividing that time into four periods of ten years each, and statistics show that on an average the price of fruit has constantly increased. In strawberries and other small fruits this has been very marked. Production has grown rapidly in that time, but prices have constantly advanced. Occasionally we have a year of great abundance of apples, and prices are low. But farmers generally do not seem to have realized yet that the surplus apples may be very profitably utilized in fattening both hogs and cattle. The best of meat may be made with a little corn and plenty of apple food. In older countries it is well known that this kind of feed, cooked and mixed with ground grain, is very healthful for all kinds of stock, and it is doubted that hogs would have the disease known as cholera if fed this kind of ration frequently. So we see that in years of abundance the surplus fruit, when the price is low, may be profitably fed to stock, and thus we may realize a good price for it. There is no danger of planting too many orchards, or of getting too much fruit.—*Indiana Farmer.*

HINTS UPON MARKETING.

C. D. Lawton, Secretary of the Lawton Pomological Society, gives valuable hints as to marketing. He says:

Few fruits, in preparing for market, need to be more carefully handled than apples. Peaches will bear much rougher usage, but great care should be taken not to bruise any fruit. The keeping and eating qualities of fruit depend much on the time at which it is gathered; it should be picked from the tree just the right period of ripeness. This condition of proper ripeness is a matter much easier learned by observation and experience than by description. The fruit shows a general color indicating a change to ripeness which an experienced picker will recognize. Upon some fruits, as the peach, there is a certain indescribable bloom or shade, a slight brightening of color, an increased brightness of the little red specks scattered over the fruit, which one accustomed to the business will readily perceive and which will enable him to act accordingly. Generally, peaches are too ripe when shipped, especially if the market be distant; if the market be near at hand, the fruit may be allowed to remain longer upon the tree; although peaches will bear harsher treatment than apples, yet care should be taken not to break off the stems.

Mr. Engle, an experienced peach grower, says that his observation shows only loss on marketing over-ripe peaches. He has always found that peaches, picked in the proper season, brought on the average double received for those which were allowed to remain on the tree until too ripe. If peaches are to be sent to any distance, it is undoubtedly better to pack them in boxes, since boxes enable the shipper to press down the fruit more snugly and to cause them thus to retain their places in the package during the journey to market. Care should be observed to select the fruit of a uniform size both for appearance and for convenience in packing. Small peaches should never be mixed with large ones. It is better to pick over a tree several times, so as to select of the same degree of ripeness and of corresponding size.

In packing it is better to sort the fruit, making two or three grades. If small peaches are put in with large ones they should be on the top so that they may be first seen and show that they are not put in for deception. Buyers

soon learn whether a shipper's brand can be depended on and deal with him accordingly. If the commission merchant finds that the shipper's brand can be relied upon, he receives and sells the packages without opening them, is enabled to guarantee the fruit to his customers without examination, thereby securing greater dispatch and more satisfactory prices.

Commission men have their retail customers who require the best the market affords, and who are willing to pay a better price for the article, so that shippers who put up their fruit to meet the want will profit accordingly. If a grower puts up culls, the fruit should show just what it is, so that there is no deception. In packing peaches the box should be filled slightly above the edges so as to be pressed down when the cover is nailed on. The operation is greatly facilitated by using a press for this purpose.

In the business of packing women do better than men, working more rapidly and evincing more skill in selecting the fruit. One of the most profitable peaches—while one of the poorest in quality—grown in Western Mich., is Hale's Early. They always sell at good prices. It is of great importance that a fruit raiser shall secure a reputation for sending to market fruit that shall always be true to the brand. The above are some of the points brought out in a discussion by the Lawton Pomological Society, on packing and marketing fruits.

LOW HEADS AND GOOD FRUIT.

Cost of transportation and marketing apples and pears is about the same, whether the fruit is poor or good. Fruit carefully picked by hand is worth twice to thrice that shaken from the trees, or, what is still more barbarous and injurious, beaten down with poles. In the latter case, the bruised parts are not fit either for eating or cooking; and if the fruit is to be kept during winter, these cause it to rot more rapidly than it otherwise would. The true way is to grow fruit trees with branches so low as to enable one to stand on the ground—or at most, on short steps—to pick it off; then neither shaking nor pole beating is required; and if the fruit drops prematurely ripened, the distance to the ground is so short it does not get injured by the fall. Some contend that the trees should have high branches, to admit of plowing beneath them. But it is never necessary to plow nearer to the tree than the outside branches, and then the roots are not broken and badly injured. Let grass grow up under the trees and rot there. It makes an excellent mulch, highly beneficial to the growth of the tree, and a soft, clean bed for the fruit to fall on.—“*A.*” in *N. Y. Tribune*.

PEACHES MARKETED IN ALLEGAN COUNTY.

The following from the *Allegan Journal*:

The figures indicating the production of peaches in this county and the prices paid for them, produce astonishment even among those engaged in the business of growing the fruit. We read of a man who got \$1,000 for the peaches on less than four acres, without the trouble of picking or marketing them; of another, whose sales from an orchard of ten acres amounted to \$4,700; Senator Lewis has good cause to estimate the value of the peach crop

of the lake shore towns at \$200,000, and of the town of Ganges alone at \$50,000 to \$70,000, and no one questions this; while from two warehouses in Douglas 147,593 packages of peaches were this season shipped, and from Fennville 137,500 baskets. One firm has shipped from Allegan to Milwaukee over 600,000 pounds of fruit. And now comes from Ganges a report in some respects the most remarkable of all—that a man recently sent 150 bushels of peaches of the Smock variety, to Chicago, and received a net return of \$500 or \$3.33 $\frac{1}{3}$ per bushel. Probably this is the highest price paid for peaches this year to any Allegan county grower. If anyone has received more the *Journal* would like to know of it. The difference in price between the early and late Crawford, this year, clearly showed that the late varieties were the most profitable, but this sale of Smocks gives still greater proof of it.

A correspondent of the same paper gives the following statistics of the peach trade from the village of Fennville, in same county:

I have just received the figures from the agent of the C. & W. M. railway company at Fennville, of the total number of baskets of peaches shipped from this station this season. It is in round numbers, 137,500. I have been able to get but a few names of shippers in the immediate vicinity of Fennville, but a few have their amounts summed up. Jas. Goodrich shipped 6,655 baskets of peaches and 500 baskets of grapes. The peaches netted 32c. per fifth-bushel basket. Mortimer Rogers shipped 5,000 baskets of peaches; M. C. Wilson, 1,482; Chas. Abbott, 2,100; S. Atwater, 2,500; John Whitbeck & Co., 3,600. I send you also the amounts deposited and paid by Chicago commission men. Heber Walsh, of Holland, paid out \$5,027.10 for wheat. The other sums given were paid for peaches during three months of the season:

H. Walsh.....	\$5,027 10
G. Lasher & Son.....	2,065 00
E. Todd & Co.....	1,775 00
Linn & Evans.....	1,400 00
Beek Brothers.....	2,195 00
F. Nickerson & Son.....	400 00
Mather & Wheelock.....	4,300 00
B. H. Powers.....	470 00
Stewart & Wolcott.....	1,300 00
M. Baker & Co.....	700 00
J. H. Phillips & Co.....	200 00
Wm. Ermeling.....	900 00
C. H. Weaver & Co.....	725 00
J. W. Holliday & Co.....	400 00
F. A. Thomas.....	1,050 00
E. R. Nichols & Co.....	600 00
Total.....	\$23,507 10

The above sum was paid out by Andrews & Rouse. J. G. Lamoreux paid, during the same time, the following amounts, from the parties named, for peaches:

Campbell & Perch.....	\$500 00
Watts & Wagoner.....	200 00
A. L. McClurg.....	400 00
Shultes & Snyder.....	1,200 00
Aaron & Birmingham.....	3,154 65
Elwolds & Caldwell.....	950 00
A. L. Tucker.....	4,477 13
B. F. Baker & Co.....	1,450 00
P. C. Sears.....	1,300 00

M. George.....	\$560 00
Gruber Brothers.....	130 00
C. B. Hayden & Co.....	300 00
Total.....	\$14,621 78

These two totals show the payment of \$38,128.88 by the parties mentioned, but besides this, as nearly as I can find out, there have been \$12,000 more remitted to growers direct from Chicago, or over \$50,000 in all have been paid to men living in the vicinity of Fennville, this season, and all but about \$5,000 for the peach crop alone.

CHEAP FRUIT ROOMS.

A building accommodating 3,000 bushels of fruit and keeping "pound" apples until October the following year and "greenings" until July was described by Judge Stitzel at a meeting of the Pennsylvania Fruit-Growers' Society. The house, built in Reading, Pa., and costing \$350, is of wood, above ground. Ice stored above keeps the temperature nearly down to freezing. The ceiling is water-tight, to prevent moisture accumulating inside. Tan bark occupies the space in the walls. The apples, packed in two bushel boxes, are so placed that the bottom of one box is the lid of the next one below. A still less expensive fruit-house described at this same meeting was built half under ground, the body of ice being twelve feet deep. Mr. Tracy, who had experimented with burying barrels of fruit in the ground, covering lightly with earth, reported that he has buried "Maiden's Blushes" in autumn and kept them soundly until April. "Greenings" similarly treated had lasted two months longer.

The Journal of Chemistry advises that when barrels of apples are stored they should not stand on end, but be piled one upon another horizontally. It is also suggested that when practicable two rooms be devoted to the storing of fruit, the object being to secure a cool, airy place for the fruit during the late autumn months and early winter, if the weather is mild, and a frost-proof apartment for their reception later. Through the first and outer room the second one can readily be ventilated. And here an important caution is to be observed. Never ventilate or open the doors of the winter cellar or fruit room on mild, damp days, but select clear, dry weather, when the thermometer is just above freezing, for this purpose. When the air of the store-room is colder than the external air, on admitting the latter a condensation of moisture inevitably takes place and injures the fruit.—*Practical Farmer*.

PRESERVING FRUIT.

Light and heat are the agents in ripening fruits. The sagacious pomologist therefore keeps them in a dark place and at as low a temperature as possible short of freezing. Heat and moisture cause decay. Hence, the fruit room, in addition to being kept cool, is also kept dry. These three conditions were observed by Prof. Nyce in his system of preservatories, ice being used for cooling, and proper dryers for taking up the superabundant moisture. We have had ripe tomatoes kept for three months in such a house, and in the

most perfect manner. Fruit growers may arrive sufficiently near the mark, so that fruits may be kept perfectly during the cold months, by means of frost-proof walls and a careful system of ventilation, avoiding a thorough draft.

Since fruit is easily affected by odors care should be taken that the air of any fruit house should be kept clean and sweet. To this end nothing but fruit should be kept in the fruit house, at least nothing that will give off unpleasant odors. So particular are some in this respect that they will not keep apples and pears in the same room. To ensure perfect cleanliness the walls and floors should be frequently whitewashed with lime. We see no reason why the sub-earth air-duct system may not be one of the best means for winter ventilation as it certainly must be for summer ventilation.

With care fruits may be retarded in their ripening for long periods. When wanted for use they are removed to a warm and dry place, where they quickly mature. When extra fine specimens are to be preserved they are carefully packed in some dry odorless substance, as cotton, wool, bran, buckwheat hulls, dry oak leaves, or pure sand. Land plaster is said to be an excellent means for saving apples through the winter intact. A thin layer of plaster is placed in the bottom of the barrel, then a layer of apples, and so alternately layers of plaster and apples until the whole barrel is filled, when the barrel is headed and kept in a cool place until spring, coming out sound and intact. This plan should keep russets and other varieties liable to shrivel, and those wishing to keep apples as late as possible and having no fruit houses, may find this plan valuable. There will be no loss in the plaster for it will be worth all it costs and more for sowing on the land after the apples are used.—*Prairie Farmer*.

KEEPING APPLES.

Apples should not be put into the cellar until hard freezing arrives. They should be packed in clean, new barrels and stored in some shed or covered with boards exposed to the atmosphere for several weeks after picking, then removed to the grain barn, away from the smell of stables, and allowed to remain there as long as possible and not be frozen. We throw stalks or straw over the barrels, and often defer placing them in the cellar until late in December. The fruit cellar should be darkened and kept as cool as possible and not freeze. Place the barrels on their sides with strips of wood between them and the cellar bottom, and do not open or move until wanted for use. If the cellar is free from the scent of vegetables when the barrels are open a rich, tempting perfume will arise. Most cellars are too warm for the storing of fruit.—*Boston Journal*.

HARVESTING APPLES.

My method of gathering and storing winter apples is about as follows:

All dry apples—those inclined to wilt if exposed—like the Russet and Swaar, and, in a measure, the Baldwin, I put in barrels. All juicy sorts, like the Spy, Greening, Rambo, etc., I store in crates made for the purpose, that hold $2\frac{1}{2}$ bushels each. These are made strong, light and in a form convenient to handle, all are three feet long, fourteen inches square and closed at the middle.

I store at first out of cellar in a cool dry place, and assort and put in the cellar as late as is safe to hold outside. My cellar will hold some 1,500 bushels, and leave some room to work. The larger the cellar the better, as the temperature can be better controlled. Devoting my cellar—my fruit cellar—wholly to fruit, I am able to keep it much nearer the freezing point during the winter than otherwise, a point quite important to attend to in keeping apples.

I think it all important to cultivate an orchard until it is well established in bearing. Beyond this it is still an open question whether it is really the best plan to cultivate more frequently than once in five or six years. After trying both plans I am inclined to the latter, but concede the necessity, at least the expediency of manuring the ground, and of thorough pruning.

I am persuaded that for an old orchard, pruning is of more importance than cultivation.

B. HATHAWAY.

Little Prairie Ronde, September 6.

VALUE OF APPLES FOR FODDER.

The value of apples for fodder for farm stock is one point on which all stockgrowers agree who have an opportunity of giving this fruit a trial in connection with other rations. The chief objection to apples for this purpose—the liability of animals choking on them—disappeared with the introduction of root-cutters, and farmers, especially those operating in climates which forbid grass during the entire year, are increasing the area devoted to orchards with a view of disposing of any surplus amount as fodder. Some of our progressive dairymen, indeed, go farther, and urge apple culture as a necessary adjunct to the dairy business, so thoroughly convinced are they that apples given to milch cows in connection with feed rich in nitrogen, during the winter season, impart to their milk a rich flavor, and to the butter a color akin to that gained from grass. Where soil and climate are adapted to them there is no doubt that apples for stock can be grown cheaper than any other kind of food of corresponding value, grass excepted.

Hogs are rapidly fattened on apples when grain meal is intermixed, and horses and sheep thrive on them in place of roots when given with hay.

Apples are comparatively little value when fed alone. This is accounted for by the small amount of nitrogen they contain, hence the necessity of associating them with rations rich in the elements they lack. The same rule holds good with apple pomace, which is valuable or almost worthless, according as it is fed separately or in connection with other materials.—*New York World*.

ANOTHER UPON THE SAME.

The New England Farmer, through one of its correspondents, says:

He had a cow which gave only a small quantity of milk, and with her he began, thinking there could be but small loss should the experiment fail. He commenced by giving two quarts of apples at a feed, and gradually increased to half a bushel. The cow began to increase her milk till she nearly or quite doubled in quantity. The milk and cream was tested at every stage and found

to be equally as good as when grass alone constituted the feed. To make assurance doubly sure he stopped feeding the apples, and immediately the cow fell off in her milk to her former yield. After a few days he began feeding again and former results were attained. It must be understood that the apples were a mixture of varieties, the majority being sour, and windfalls at that. Being pleased with the result thus far he began to feed them to his other cows with good results, the gain in milk being about 50 per cent, and the quantity and quality of butter also increasing in somewhat like ratio. The grazing was rowen of the meadow. The only secret of success was commencing to feed in small quantity and gradually increasing to the capacity of the cow's appetite. Now, should any of your readers try the experiment by turning his cows into the orchard and allow them to eat at their will to begin, and should the cows be badly injured or killed thereby, do not throw the blame where it does not belong.

EATING FRUIT.

TASTE AS APPLIED TO FRUITS AND VEGETABLES.

It has been said "there is no accounting for tastes." This may be true in the main, but I think there are many, if not a majority, of the eccentric or abnormal cases that can be traced to a whim, a disordered imagination, or to somebody's remark, that the food was specially healthy or unhealthy. It is most certain that the imagination has much to do with the flavor or supposed flavor of substances taken into the mouth. Cases are related where simple bread pills have caused violent vomiting, when taken under the impression that they were a nauseous emetic, and patients have been known to take easily every day for a week medicines that their stomachs would not have retained a moment had they known what they had taken. And singular as it may seem, those who have the most confidence in their own ability to detect any such imposition, are often deceived the most easily.

The Baldwin apple has a very high reputation among apple growers, and, of course, among nurserymen who supply them with the trees. So great is the reputation of this apple that several, when asked what kinds they would recommend for an orchard of 100 trees, have answered: "Ninety-nine Baldwins and the odd one another Baldwin." But is it because of any peculiarly delicious flavor of the fruit? No! if tasted in the dark, most persons would, from the mere taste, prefer the Swaar, Peck's Pleasant, Spy, Red Canada, and several of the Pippins, and perhaps the Greening and Spitzenberg. The reputation of the Baldwin is derived, not from any fine flavor, but from the vigor and thriftiness of the tree, the fairness and fine appearance of the fruit, its good handling and keeping qualities; but, most of all, from its extraordinary productiveness, in which, so far as dollars and cents is concerned, it is doubtless superior to any other of the long-tested varieties. Such being the case, those who raise apples for profit, show good judgment in planting largely of this variety. But the consumer, when he goes into market

to select fruit for family use, does not show good judgment when he gives a preference in choice, and many times in price, for the Baldwin, simply because of its high reputation. Even the Pennock—about the poorest of all good-looking apples—I have seen selected for home use, because there was stamped on the barrel head, “Baldwin.” My object is not by any means to decry this apple, but to show upon what foundation opinions and tastes are formed.

In grapes and other small fruits, it is well for us to consider which of their constituents it is that gives them their luscious flavor, their cooling and thirst-allaying effects. Without going into the naming of the many simple elements of which they are composed in common with all fruits, we may say that what gives them their peculiar relish is a certain proportion of acids, sugar and water. Admitting this to be true, we would suppose, as the office of water is simply to dilute the other ingredients, that those varieties which contain the most sugar and acid would be the most palatable and nutritious, the richest and most satisfactory to the appetite. They certainly contain, per bulk, more of the elements of nutrition, but I think they are not generally preferred as table fruits—and why?

Dr. Grant and Mr. Meade have much to say about the “education of taste,” and I must admit that there is much in it, for I have noticed that those persons who have never been fully supplied with our common fruits, see little difference in the different varieties of the same kind. What constitutes the sweet or sour taste of our fruits is not the absence of either of the compounds, but the predominance of one over the other. Of strawberries I have never seen an analysis of different varieties, but my own opinion, judging from what I have seen and tasted, is that the Wilson is at about the height of richness in sugar and acid, and that when you go above that in size, you get simply an addition to the water, and if you like the larger kinds better because they are less acid, is it not because the sugar and acid are simply diluted? The Concord grape, admitted to be “the grape for the million,” but so far as the fruit elements, sugar and acid, are concerned, it is weak, especially in the former, consequently it lacks flavor, and, as compared with many others, it is simply diluted. The Clinton is called by many a poor, sour grape, but in these fruit elements it is one of the richest. I have the analyses of 38 varieties of northern grapes, in which the Clinton contains the most sugar, almost double that of the Concord, but it also contains over three times as much acid. I do not wish to quarrel with those who cannot bear sour fruits, and who think that excellence in them consists solely in their sweet flavors, but richness in these fruits is certainly a desirable quality, if we can educate our tastes up to a relish of them.

We gather and eat our fruits before they are ripe; the ripening process in fruits consists largely in the transformation of acids into fruit or grape sugar. We of the laity are not expected to be chemists, but if we look into our children's school books on chemistry, we shall see that these fruit sugar and acids, are composed of the same elements, differing only in their proportions. Nature is a great chemist. In the green corn she puts sugar, in the ripening process she changes this sugar to starch, but when you plant this corn for a new crop, about the first thing she does is to change this starch back again to sugar, to give nutriment to the new plant, which starch cannot do. So when we eat this ripe corn, nature seizes upon its starch and changes it to sugar before it can act as nutriment to the system. This fruit sugar, however, is not the

same article that we suppose we buy for the table, but the kind with which the sugar refiners are now charged with adulterating or rather diluting the common sugar; namely, glucose, or fruit sugar, it being precisely the same as our table or cane sugar, with about ten per cent. of water chemically combined with it.

S. B. PECK.

Muskegon County, Mich.

EATING FRUIT.

For most persons ripe fruit is very healthful food. To be sure, there are abnormal people to whom even the delicate strawberry is a poison. But too many bad feelings are laid to the consumption of fruit when they are due to the accompaniments of fruit. One may go into the strawberry patch and eat his fill, raise up, move about a little and be ready for more, and still eat on indefinitely and receive no harm. The same person, by consuming a tenth as many berries done up in a four-story short-cake enveloped in sugar and rich cream, may feel very unpleasantly thereafter, and in a majority of cases the strawberries have to take the blame. The same is true of the long list of fruits that follow the strawberry. We are too apt to accompany the eating of fruit with things that impair digestion, and lay the foundation of disease. In eating most kinds of fruit the diet should be as simple as possible; a little sugar is proper, but cream and pastry should be avoided in much quantity. They are very palatable, to be sure, but it is a question how much we can afford to please the palate at the expense of a healthy stomach.

S. Q. LENT.

BIRDS.

HE LOVES THEM ALL.

Professor A. J. Cook of the Michigan Agricultural College, writes to 'The Scientific Farmer' that having given the subject no little research and observation he is fully convinced that nearly all of our birds, not excepting robin, jay and grackle, are the farmer's efficient aids and very worthy of his fostering care. He has made "actual examination of the birds' stomachs purposely to eliminate every possible source of error."

THE ENGLISH SPARROW.

Gentry in his work on sparrows, after a thorough examination of the habits of the English sparrow, thus concludes:

In Europe the sparrow has been placed by eminent and well qualified investigators foremost in the rank of useful birds. When it has been exterminated it has been necessary to re-establish and foster it at infinite trouble and

expense. Over there it constitutes part and parcel of the natural economy of animal life; it has its place and fills it. Mr. Stephen Gould, of Newport, R. I., says the imported sparrow seems to court the society of other birds, and never have the birds been so abundant on our place. Prof. Thos. M. Brewer, of Boston, says: "Only five native birds were known on the Boston Commons, 20 years ago, to his certain knowledge, but now since the English sparrow has been introduced there are no less than 17 different species. We also have the emphatic testimony of Hon. F. W. Giles, of Topeka, Kansas, who also denies the alleged quarrelsome disposition of the English sparrow, and adds his valuable observations in regard to its destruction of the maple worms from his own trees, during the summer of 1877."

ANOTHER TESTIMONIAL.

It has been said the English sparrows destroy fruit. I have a fine raspberry bed, on which, year before last, the catbirds left me scarcely a taste. The same occurred with my strawberries and in my orchard. As soon as a luscious pear would get ripe, the catbirds would have the best of it. I very reluctantly had war declared against the catbirds, and many were killed. Last summer I did not allow more than one or two pair to nest on my grounds. These I gave their liberty, because I am fond of their song. The consequence was I had plenty of berries and pears. The sparrows had full liberty to go where they pleased. I watched them constantly, and I have yet to see them touch the fruit. It is said they are quarrelsome and drive away other birds. I have many birds of all kinds on my grounds, which I protect, and during the summer my lawn, shrubbery and orchard have many nests of young in them. I have put up boxes for the sparrows on my barn, and in my pines, yet, with a single exception, I have not seen them interfere with their neighbors. Last spring I had a little house with apartments in it put up for martins. A pair of blue birds took possession of it and built a nest. Just at this time a pair of sparrows wanted to examine the interior of the house, but every time one would come near, down would come the bluebird on the sparrow. At last the sparrows went away, but soon returned with their friends, and they had a lively time of it. But the sparrows were too many for the bluebirds, which left and found a hole in an old apple tree in the orchard, at some distance from their little house, and built a nest and brought forth their brood. The sparrows, after they had whipped away the bluebirds, took possession of the house and brought forth their brood and left. Then the blue birds returned and took possession of the house, and brought forth another brood. But I noticed there was one on guard all the time. If a sparrow came near, down came the bluebird, and drove him away. After the bluebirds and young left the house, the sparrows returned, and used the same nest, and brought out a second brood, all of which are still in the house.—*Mrs. E. R. in Country Gentleman.*

Clifton Heights, O.

BENEFICIAL, NOXIOUS, AND DOUBTFUL BIRDS.

Dr. Thomas, in his entomological report, gives the following list of useful and noxious birds and those of doubtful utility to the horticulturist:

Birds that should be fostered.—Blue birds, titmice (chickadees), warblers (small warbling birds found on trees and in gardens), kinglets (ruby crowned

and golden crowned wrens), nuthatches and creepers (black, white and brown), wrens, martins (swallows), vireos (greenlets), tanagers, finches, song sparrow, chipping sparrow, field sparrow, clay colored sparrow, black throated bunting, indigo bird, cardinal grosbeak, ground robin (chewink), black birds (crow, bobolinks, meadow lark and others), all the fly-catchers (including king birds and peewee), cuckoos, nighthawks (goat suckers and whip-poor-wills), swifts (chimney swallows), all the woodpeckers except the yellow billed—*Sphyrapicus varius*—(known in central and northern Illinois as the sap-sucker), and, perhaps, the large red-headed woodpecker—*Melanerpes erythrocephalus*—plovers, prairie snipe (prairie plover), quail.

Destructive birds.—Cedar birds, Baltimore oriole (hanging bird), larger owls, hawks, and the yellow-billed woodpecker (sap-sucker of central and northern Illinois). This species is distinguished from the other small woodpeckers by its pale yellowish breast, a large patch of black upon the upper part of the breast; the throat of the male is a bright red, and that of the female is white; the adults, both male and female, have the top of the head also red.

Birds of doubtful utility.—The following are birds whose habits are not sufficiently known to justify full recommendation, and whose habits are sometimes beneficial and sometimes injurious: Thrushes—including the common robin, cat bird, mocking bird, brown thrasher, wood thrush, tawny thrush, and hermit thrush. Shrikes—including the great northern shrike and white rumped shrike (butcher bird), Savannah bunting, crow, blue-jay, red-headed woodpecker, saw-whet owl, screech owl, horned lark, orchard oriole, and pigeons.

INSECTS AND DISEASES.

GRAPEVINE FLEA-BEETLE.

Prof. Cook gives the following remedy for the larvæ of the grapevine flea-beetle:

Dusting the leaves with lime is said to destroy the grubs. Hellebore and Paris green will certainly do so, though they are poisons and require much care. These may be mixed with ashes and dusted on or put on with a sprinkler, after mixing with water. With ashes mix one of hellebore to five of ashes, or one of Paris green to 30 of ashes. With water use tablespoonful of powder to two gallons. Use the green with great care. The insects will be gone in about two weeks.

MICHIGAN APPLES—THEIR FREEDOM FROM INSECTS—A QUESTION FROM KANSAS.

The following question and answer are from the Farm Department of the *Detroit Free Press*:

I have noticed in our markets that the shipments of apples from your State

this year have been remarkably free from insects. If you know of any means being used by your orchardists to secure such conditions, or can in any way explain the reasons for such a different condition from former years, please inform me.

G. C. B.

Lawrence, Ks.

ANSWER:

It is a very common saying that apples were free from the ravages of the codling moth in 1878, because in 1877 there were not apples enough grown to form habitations for the insects, and hence enough insects were not developed during that year to produce an extensive population for the following year.

On the other hand there are those who maintain that if these codling moths cannot find apples to build in they will build anywhere—in the bark of trees, in the forest, etc. Again, there is an impression quite general that the methods pursued for the extermination of the insects have been availing to such an extent as to account for the freedom of the crop of 1878 from insect marks. The probability is that there is some truth in all these hypotheses, and a good deal of error.

The moths will reproduce more successfully when there are an abundance of apples to develop in; and, at the same time, if there are few apples they will probably adapt themselves to circumstances and seek habitations in wild crabs, thorns, or other fruit allied to the apples; but we should need very strong testimony to convince us that they can develop from the egg to the imago in the bark of a tree, or in any tree without fruit, or with fruit outside of the sub-order *pomeæ*. Again, although in a few localities valuable efforts have been made to fight away the little marauders, but that on the whole it has materially influenced our main crop for export, we are in grave doubt. Michigan shippers are getting to be more particular about the selection of fruit for foreign markets, and this may account somewhat for the perfect apples sent to Kansas; but we are convinced that the main cause has not been touched which will give answer to our Kansas correspondent. The winter of 1877 and 1878 was an exceptionally mild one and the codling moths were hatching out every month from November until April. After hatching out they sought places to deposit eggs, but there being no blossoms out, the insects died or were destroyed without accomplishing their mission. In orchards within our acquaintance in the month of February, 1878, thousands of these insects hatched out and were destroyed by subsequent cold. In this climatic peculiarity we find the probable solution of this question, and unfortunately it is an influence over which we have so little power or control that there is nothing very promising for assistance in future operations against this dreaded foe to Michigan apple culture.

SCRAPING FRUIT TREES.

One of the finest orchards I know in Michigan has been scraped and washed with soap annually in the first week of June for years, and I feel certain it has been benefited thereby. Professor Beal does not say that this may not be an aid in fighting lice and the codling moths. He thinks that physiologically the trees are not benefited by scraping off the bark, and farther inclines to the opinion that trees so treated may be less fortified to resist severe and long continued cold.

I think scraping should be carefully done. It is the rough bark, not all the bark, that it is desired to remove. So far as I have observed, I am led to doubt that trees scraped in June are less able to stand a severe winter. I can see no reason why they should be. The bark scales would seem a light armor against severe cold. I believe scraping and washing trees with soft soap in early June very serviceable. Let others report.

PROF. A. J. COOK.

THE CODLING MOTH.

My plan—as at present advised—is to scrape off all loose bark—there is no moss in my orchard—from the trunks and large branches, and then wash with whale-oil soap—one pound of soap dissolved in about three gallons of water, and applied with a stiff brush. As soon as the blossom buds start, apply the “bands,” so often recommended, of course to be followed by the destruction of all wormy fruit. If the above plans fail—especially the first—then I confess my inability to manage the codling moth.

NELSON RITTER.

THE PEAR SLUG.

It is a dull olive brown small slug-like larva or false caterpillar about a third of an inch in length. It differs from the young of most saw-flies in secreting under its skin a slimy exudation, which, with its color, causes it to closely resemble a slug. It creeps about over the surface of the leaf by twenty short feet. It nibbles the upper surface of the leaf of the pear or cherry by means of two short stout jaws, eating the pulpy part of the leaf, making patches of a dead brown color; several larvæ on a single leaf producing numerous spots, thus disfiguring the leaf and causing it to wither. In certain seasons and localities entire orchards may be injured by these slimy pests. The black fly, with four wings, is remotely allied to the ants and bees, and appears in June when it lays its eggs, the slugs appearing in July and early August. A second brood of flies occurs in September. Many of the eggs of this fly are rendered abortive by the attacks of a minute parasite fly (*Eneyrtus*) which oviposits in the eggs, thus preventing the development of the slug. By scattering lime, ashes, powdered hellebore or Persian insect powder over the infested leaves, or by showering the tree with a solution of carbolic acid or carbolic soap suds, the ravages of this pest may be stopped. An account of the insect, the scientific name of which is *Selandria cerasi*, of Peck, is given in Harris's “Treatise on the Injurious Insects of Massachusetts,” and a brief account with figures of the insect in its different stages is given in Packard's “Guide to the Study of Insects.—Professor A. S. Packard.

DO BEES DESTROY GRAPES?

There has been quite a controversy between apiarians and fruit growers as to whether bees destroy grapes or not. Mr. Langstroth and others claimed that the bees did not and could not eat a grape until the skin was first punctured. The fruit grower, however, who found the bees swarming on his

grapes and had, as I did last year, bushels destroyed, utterly disbelieved this theory, and was ready to indict the bee-keeper for maintaining a nuisance. I have not kept bees for a good many years, and so had no chance to experiment with them, and I firmly believed that bees did destroy the grapes. Some experiments have been made recently by Mr. Lyn Bonham, a young gentleman attending the Miami Classical school at Oxford, O., which seem to settle the question and exonerate the bees. He placed on the honey board of a Langstroth hive a bunch of ripe grapes, and after leaving them two days he examined them and found them perfect. He then punctured three of them with a pin and replaced them, and on examining them a few hours after, he found those he had punctured all sucked dry and none of the rest damaged in the least. This seems to be conclusive, but as "in the multitude of counselors is safety," I wish to ask a number of our readers who have bees to try this simple test. Select a bunch of grapes that you are sure are sound, and after leaving them in the hive, or in front of it, a while, puncture a part of them, and let us know the result. If the bees have stood charged with the sin of the wasps, hornets, and yellow jackets, it is time they were vindicated.—*Waldo, in Practical Farmer.*

THE SQUASH BORER.

The squash borer is produced from an egg laid on the vine near the roots of the plants some time from the middle of July to the middle of August, or perhaps earlier. When hatched, the young worm bores into the stalk till it reaches the center, where it feeds until it comes to maturity. At this time the cavity it makes is so large that it causes the vines to wilt often quite suddenly. This sudden wilting may be accounted for on the supposition that this, like many other caterpillars, has a voracious appetite just before it is ready to undergo its transformations. When ready to pupate, the worm either deserts the vine that has furnished it food, and forms a rude earthen cocoon in which to pupate, or sometimes changes within the hollow stalk. The chrysalis passes the winter in its place of concealment to undergo its final change the following summer; the moth, too, becomes parent for an ensuing brood. This little moth is peculiar. When the wings are spread they measure across them little more than an inch. The wings are narrow, the hind wings and a spot at the base of the fore wings transparent, but the rest of the fore wings and the veins and fringes of the hind wings black. The thorax is dark olive, and the abdomen orange banded with black, but the most noticeable feature is the long hind legs which are heavily fringed with orange and black hairs.—*Prairie Farmer.*

GRAPE ROT.

Although we have given a good deal of space in this volume to the consideration of the grape rot problem, we are constrained to add one further note which comprises the general results of observations in Ohio as compiled by Secretary M. B. Batcham:

1. The varieties of grapes most affected by the rot, are the Catawba, Concord and others of the *Labrusca* class.

2. The disease has been more prevalent for three or four years past than formerly, and affects varieties that before had been exempt; but the increase has not been regular or uniform as to locations or extent. It is worse in the southern and central parts of the state than near the lake or on the islands.

3. Old vines, such as have been in bearing six to ten years, are more subject to the rot than younger ones, and thrifty vines more than those of moderate growth.

4. Rich soils, especially if dark or mucky, and such as retain the water of summer showers, are worse than hard clay lands of moderate fertility, especially if the latter are sufficiently sloping to cause water to run off quickly.

5. Fertilizing the vineyard with ashes, bone dust, superphosphate, etc., has not proved advantageous in preventing rot, but promotes the growth of vines.

6. Heavy rains in June and July are almost sure to bring a visitation of rot, especially when accompanied by hot and "muggy" weather—low barometer and still atmosphere; while a dry summer, with pretty constant winds, gives exemption from the disease.

7. The disease is liable to manifest itself at any time from the setting of the fruit until its full size; not merely at the latter period, as some writers have stated.

8. Rotting has been prevented by a coping formed of two wide boards placed on top of the trellis in the form of a roof, so as to shed off the rain and protect the vines largely from dew. Vines are also exempt from rot when trained on the east or south side of buildings, where the cornice mostly shelters from wet.

9. Seeding the ground in spring with oats or rye, so as to cover the whole surface during midsummer, and mowing the crop before ripe, leaving it as a mulch till the grapes ripen, is found useful as a partial protection from rot. It has also been found that a row of thrifty tomato plants, growing between rows of grapes, saved the latter from rotting, while those where the ground was naked rotted badly.

10. In at least one instance vines trained over a small stream of living water escaped rot the past summer, while those in the same garden not thus situated mostly rotted.

11. A grape grower near Dayton finds benefit from training his vines so that all the young shoots and most of the foliage shall be on the upper wires of the trellis, but the fruit on the middle or lower wire, and the leaves pretty well thinned there; so that the fruit shall be largely protected from rain and dew, and also have circulation of air beneath. By this and the oats mulch he has mostly escaped rot the past two years, while others in his section suffered badly.

12. Covering the clusters of fruit with paper bags from the time the berries are fairly set until ripe, has been practiced with perfect success by amateur grape-growers at Cincinnati for two years past, one of them saving over 7,000 fine clusters in that way, not only from the rot but also from the mildew and birds; and it is claimed that the fruit is finer in size, color and quality, than when grown in the ordinary way where disease does not prevail. The bags used are of the kind used by grocers, costing only about \$2 per 1,000. The size preferred is 6 by 9 inches; they are slipped over the clusters, and the tops folded around the stems, leaving space for the fruit to develop, then fasten with two pins. The bags will serve for two seasons if well made; and the entire cost, including labor, is estimated at one-third of a cent per cluster. Quite a

number of our amateur growers will try this plan the coming season, and possibly it will pay to grow grapes in this way for the markets.

SALT FOR PEAR BLIGHT.

J. S. Woodward, of Lockport, a very successful cultivator of the pear, gives to the Rural New Yorker an account of his application of salt, which he thinks has prevented the blight. He has an orchard of 3,500 trees of different ages, all Duchesse. The earth is plowed toward the trees once a year, and the ground kept clear the rest of the season with the cultivator. A light dressing is annually given of salt, wood ashes and bone dust. Mr. W. says he would have little fear of the blight where salt is freely used. The freedom of his trees from this disease may, however, be explained without ascribing it to the salt. The Duchesse is remarkable for its power of resisting the disease, and is rarely injured by it in any case. The blight is often entirely absent in pear orchards for a long term of years, whatever the varieties and treatment may be. In a later number of the same journal, another correspondent applied two or three shovelfuls of salt and ashes to each of his pear trees, and the result was the worst blighted trees of any in his neighborhood. It is not probable that the salt caused or prevented blight, properly so called. It undoubtedly killed the trees in the case mentioned, by an overdose, but the blight comes from another cause. The same writer says it killed his peach trees. We have known two or three quarts of brine poured around a large bearing peach tree to kill it at once. It is doubtless a good application in small quantities, broadcast, and not in a mass at the foot of the stem, but its effects are moderate and not striking.

PEAR BLIGHT.

William Saunders, before the Potomac Fruit Growers' Society, had the following:

The culture of the pear is considered a somewhat dubious undertaking when regarded in the light of a remunerative industry. This is mainly occasioned by the liability of the tree to injury from what is known as blight. For the past fifty years various conjectures have been advanced, and repeated again and again, as to the nature of this disease, without reaching the true source.

Microscopical examination reveals that it is caused by fungoid growth, which destroys the bark and outer wood of the stems upon which it may happen to vegetate. This discovery agrees perfectly with what we can observe in the spread and progress of the malady, and acting upon the well authenticated influence that sulphur possesses in destroying fungoid mycelium it has been recommended to cover the bark of the trees with a lime wash containing a certain proportion of sulphur. It is stated that no blight has ever been discovered on branches treated with this mixture. Should this prove to be the case we have, at least, a partial insurance on our pear trees, that is, we can insure the main body of the tree and the principal branches, from the attacks of the fungus, and with branches which it is inconvenient to cover, they can be cut off and burned if they become diseased.

Objections have been made to the probability of the blight being attributable to a fungoid growth, the isolated appearance of the disease being cited, against the probability of its being of fungoid origin, because, it is argued, if that is the cause why does it not attack all trees alike, or all parts of the same tree? Why should it appear, for instance, on one branch and not on the adjoining shoots? These questions are unanswerable. No one can say why it is so; but the inability to answer such questions cannot invalidate the fact that the fungoid growth is present, because ocular demonstration shows that it is there. We see the mistletoe, another parasite, attack a certain portion of a certain tree, but we do not deny its existence on that portion because we do not find it on every limb or on every branch of the tree. No person can say why this parasite has not attacked every limb, neither can any one say why the parasite on the pear tree, which causes blight, does not envelope the entire tree. The two cases are exactly similar.

Another drawback to pear culture is the tendency of the fruit of some of the best varieties to split or crack open, and become useless. Various theories have been advanced with reference to the cause of this affection. For a long time the opinion prevailed that it was owing to a deficiency of certain mineral ingredients in the soil, and various remedies based on this assumption were freely dispensed and tried, but with indifferent success. Whenever you are at a loss to account for some unusual result or strange phenomena in vegetation, it is always safe to refer it either to electricity or some deficiency in the mineral or inorganic matters of the soil. Nobody will seek to contradict the assertion, because they are equally ignorant as to its meaning, and many persons will consider it an evidence of great erudition and wisdom.

The cracking of the pear is caused by mildew, resulting from atmospheric influences. Many convincing experiments have been made showing that shelter or protection prevents it, even on varieties the most seriously affected, such as the White Doyenné, probably the best of all pears. These experiments need not now be detailed.

OUR PRESENT YELLOWS LAW.

A BILL to prevent the spread of the Yellows, a contagious disease among Peach, Nectarine, and other trees, and to extirpate the same.

SECTION 1. *The People of the State of Michigan enact*, That it shall be unlawful for any person to keep any peach, nectarine or other trees infected with the contagious disease known as the yellows; or to offer for sale or shipment, or to sell or ship to others, any of the fruit thereof; and no damages shall be awarded in any court in this State for the destruction of such diseased trees or fruit, as hereinafter provided; and it shall be the duty of every citizen, as soon as he becomes aware of the existence of such disease in any tree or fruit owned by him, to forthwith destroy or cause the same to be destroyed.

SEC. 2. In any township in this State in which such contagious disease exists, or in which there is good reason to believe it exists, or danger may be apprehended of its introduction and spread, it shall be lawful for any five or more resident freeholders of the same place or any adjoining townships to set forth such fact, belief, or apprehension, in a petition addressed to the board of such township, requesting them to appoint three commissioners, as herein-

after provided, to prevent the spread or introduction of said disease, and to eradicate the same, which petition shall be filed with and become a part of the records of the township to which such application is made.

SEC. 3. It shall be the duty of the township clerk on receipt of the petition specified in section two of this act, to call a meeting of the township board within ten days thereafter, and upon the assembling of said board to lay such petition before them; whereupon it shall be the duty of said board, upon the hearing of said petition, to appoint three competent resident freeholders of such township as commissioners, who shall hold their office during the pleasure of said board; and such order of appointment and of revocation, when revoked, shall be entered at large upon the records of the township.

SEC. 4. It shall be the duty of said commissioners, within ten days of appointment as aforesaid, to file their acceptance of the same with the clerk of said township, and said clerk shall be *ex officio* clerk of said board of commissioners, and he shall keep a correct record of the proceedings of said board in a book to be provided for the purpose, and shall file and preserve all papers pertaining to the duties of said commissioners or either of them, which shall be a part of the records of said township.

SEC. 5. Any one or more residents of the same or adjoining township may make complaint in writing and on oath, addressed to said commissioners, delivering the same to either of them, setting forth that said disease exists, or that he has good reason to believe it exists, upon lands within the township in which said commissioners reside, designating the same with reasonable certainty, or that trees or fruit infected with such disease are offered for sale or shipment, or have been introduced therein, designating the person in whose possession, or under whose control such trees or fruit are believed to be.

SEC. 6. It shall be the duty of the commissioners to whom such complaint is delivered to proceed without unnecessary delay to examine the trees or fruit so designated, and if he shall become satisfied that the contagious disease actually infects such trees or fruit, he shall, without injuring the same, fix a distinguished mark upon each of the trees so infected, and immediately notify the person to whom such trees belong personally or by leaving a written notice at his usual place of residence if he be a resident of the county, and if such owner be a non-resident of such county, then by leaving the same with the person in possession of such trees, requiring him within five days, Sundays excepted, from the date of said notice, to effectually remove and destroy, by fire or other means, the trees so marked, and in case of fruit so infected such notice shall require the person in whose possession or control it is found to immediately destroy the same or cause it to be done.

SEC. 7. If any person neglects to destroy or cause to be destroyed, such diseased fruit, after such examination and notification, but sells, ships or disposes of the same to others, such person shall be deemed guilty of misdemeanor, and punished by a fine not exceeding one hundred dollars, or by imprisonment in the county jail not exceeding three months, or both, in the discretion of the court, and any justice of the peace of the township where such fruit is sold, shipped or disposed of, as aforesaid, shall have jurisdiction thereof.

SEC. 8. Whenever any person shall refuse or neglect to comply with the notice to remove and destroy the trees marked by the commissioners as aforesaid, it shall be the duty of said commissioner forthwith to notify the other commissioners to assemble with himself on the premises on which said trees shall be, on the fifth day, Sundays excepted, after he shall have made service

of such notice, and then and there personally to examine the trees in question, and the evidence bearing upon the existence of said disease, and if said commissioners or a majority of them shall, after a proper examination of the matter, decide that said trees are infected with such disease they shall in case such trees so infected do not exceed six in number, order the same to be removed or destroyed forthwith, or cause it to be done; employing all necessary aid for that purpose, if the person in charge thereof refuses or neglects to do so; and in case the trees found to be infected shall exceed six in number, and the owner thereof shall upon the service of said notice, refuse or neglect to remove the same in accordance with the provisions of the act and the terms of such notice, then and in that case said commissioners shall petition the circuit court for the county for an order directing and empowering said commissioners to remove or cause to be removed such infected trees, and the court shall direct the defendant to be summoned, and an issue joined therein, and the cause to be tried in a summary manner, and if it shall appear on said trial that said trees are so infected, he shall grant the order prayed for with costs of prosecution against the owner of said trees, but in case such trees are found not to be infected, he shall dismiss said proceeding with costs to be taxed against the township in which such commissioners reside.

SEC. 9. Every person who shall willfully refuse or neglect to comply with the notice of the commissioners, as hereinafter provided, to remove and destroy said diseased trees shall be liable for all the costs, charges and disbursements made upon the proceedings of said commissioners and of the board of commissioners, to effect such removal and destruction, together with a penalty of five dollars for each and every day, but not exceeding one hundred dollars in all, such trees remain undestroyed, which costs, charges, disbursements and penalty shall be recovered of him in action of trespass upon the case, in the form of assumpsit, brought and prosecuted by the supervisor, in the name and for the benefit of the township, and before any justice of the peace therein, in the same manner and with like proceedings as are applicable in civil cases before such courts, and upon judgment being rendered in favor of said township, the said justice of the peace shall issue execution against the defendant in said action, which may be stayed, as in other cases, but when collected he shall pay the amount thereof forthwith, to the treasurer of said township, to the credit of the general fund.

SEC. 10. The form of the declaration in any suit instituted as aforesaid, may be as follows, to wit: In justice court, before A B, justice of ——— township, county ———, the township of ———, said county complains of C D, in an action of trespass upon the case, and says that C D justly owes the said township ——— dollars, being the amount of expenses incurred by said township in the removal and destruction of trees infected with the yellows, from (designating the premises with reasonable certainty), and the penalty incurred by said C D for not removing and destroying said trees pursuant to an act entitled "An act to prevent the spread of the yellows, a contagious disease, among peach, nectarine and other trees, and to extirpate the same," wherefore the said township brings suit. A B, Supervisor.

SEC. 11. The commissioners shall be allowed, for services under this act, two dollars for each full day and one dollar for each half day, and their other charges and disbursements, hereunder to be audited, as well as any other charges and disbursements under this act, by the township board.

SEC. 12. In all suits and prosecutions under any of the provisions of this act it shall be necessary to prove that such trees or fruit were diseased or infected.

FLORICULTURE.

MISSION OF FLOWERS.

Mr. Hugh T. Brooks, who is known to many Michigan horticulturists, gives the following beautiful thought concerning flowers:

Never till we fathom the deep mysteries of spirital and material growth, can we understand the full significance of flowers—the mission of bloom! Swine need only gross food. Offspring of Divinity, illumined by a ray of infinite intelligence, we require ethereal nourishment. Why all this brilliancy and variety of color, the sweet harmonies of sound, if they are not to challenge our admiration, engage our thoughts, and minister to our necessities! We are spir-itu-ally fed by the grand, the beautiful, and the good in nature. Our souls are enlarged, strengthened and purified by ocean's vast expanse, the serene depths of the blue sky, the shifting drapery of the clouds, the matchless grace and beauty of the floral kingdom. Certainly the bread that nourishes our grosser parts is not more important than that which ministers to our higher faculties. The appetites, lower instincts and passions will control the man, unless his moral sentiments and intellectual perceptions are cultivated by the devout contemplation of God's wonderful works. The mission of flowers, like the angels, is pure.

PROLONGING THE BLOOM.

No plant can continue in bloom if nature is permitted to do her work completely, for the going to seed exhausts the energies of any subject, and stops everything else. By constantly removing decaying flowers before a seed-pod can swell, the growth of the plant and the continued development of new buds and flowers upon the new growth are matters of course. Try the experiment upon the China rose. Two cottages, having fine plants covering their fronts, being in the hands of two different persons, frequently exhibit the most striking contrast—one a mass of flowers, while the other is bare; and those who pay no attention to the cause are, nevertheless, often surprised at the fact. If they look a little further into the matter, they would observe that the one is loaded with hips or seed-vessels, which are swelling in great numbers, while in the other not a solitary berry could be seen. In the one case every bloom was trimmed off as fast as it faded, in the other they took their chance. So it will be found in many other cases. It is only necessary to cut away the dead flowers, and the season of bloom will be prolonged.
—*The Farm.*

THE VINCA.

One of the best bedding plants is the Vinca. Not the periwinkle—*Vinca minor* or *Vinca major*—although both of these old acquaintances are indis-

pensable in their place; but the greenhouse species—*Vinca rosea*. The variety with dull, purplish-rose colored flowers is altogether inferior to the pure white, or white with a pink eye. If the seed were sown early in a hot-bed or greenhouse the plants should be making a brave show before August. They begin to bloom much earlier, but do not fill the bed completely until midsummer. This vinca is a sturdy grower, with a stout stem, and no tendency to lop down and trail. The flowers are borne on the end of every branch, and rest in a whirl of leaves which are of the deepest and glossiest green. At this season a bed of well-grown vincas will be a mass of dark, luxuriant foliage, thickly starred with flowers of dazzling white, and it will flourish in undiminished beauty until frost.—*N. Y. Tribune*.

CULTIVATION OF FLOWERS.

Few people are aware with how little trouble and expense they can have a flower garden. To be sure there are some flowers that require a great deal of care, but there are others equally beautiful which may be cultivated with less care. For instance, the petunia, also the Phlox Drummondii, both of which require very little culture, and bloom continually from the last of June until the frosts come. They make the best display when grown in masses on a grass plat, or a bed by themselves. Each bed should contain only one kind of flowers, unless it have for a center piece something tall, as a geranium, a bunch of sweet peas, or, better still, a young evergreen, which will grow all the better for this cultivation around its roots.

When the plants have made their appearance they will need weeding two or three times, but no further care, unless they should get too dry during July or August, then suds left from your washing will be a great help to them. When they are once sown they are sown forever, unless an improvement is sought for by saving and sowing seed from the finest blooms, for the ground will be full of seeds.

I have written at some length on the culture of these two flowers because they really yield such a variety and profusion of bloom, for so little care, that no woman who has a piece of ground need miss them for the lack of time and strength.

Then there is the aster, larkspur, marigold and balsam (or as some call it lady slipper), and many others that give their blooms to those who love them. But some may call them common flowers, but in one sense of the word there is no such thing as a common flower. The dandelion we so carelessly tread upon, or the thistle we whip off so ruthlessly will disclose beneath the close scrutiny of the microscope sufficient beauty to thrill the heart with the difference between human mechanism and divine creation. Did you ever stop and look at some beautiful flowers, and if so, did you not wonder in amazement, and ever say to yourself, "What a pretty flower that is! how lovely the color! how various the colors! how beautiful! truly, God is good!" Such is my admiration that I think it would be a sin not to love flowers.—*Stella M. Hubbard in Grange Visitor*.

Saginaw, August 23d.

WE WANT MORE FLOWERING SHRUBS.

Farmers would have more flowers about their homes if there was not so much labor connected with them. It took us a half day to weed out the petunia bed, and while we were at work it occurred to us how much easier it would be to cultivate flowering shrubs. They could be tastefully set about the door-yards and lawns and in the gardens, and very little labor would be necessary to keep them in order. Strong-growing plants, like Peonies and Hollyhocks, are not much trouble and are beautiful in their time. Perennial plants are what farmers want the most. These can be set along the walks and in clumps, and one or two dressings during the summer will protect them from weeds and grass and keep them in thriving order. If the Rural will give its readers a list of hardy perennial plants and flowering shrubs, including Roses, which will bloom during the entire summer in their order, we are certain the favor will be appreciated, and discouraged flower-growers will start anew. For the autumn we must have the Asters, Phlox and Zinnias, but they are not so much bother as many others, and their beauty will pay for the extra care. This might be said of all flowers, if one only had the time to spare. Some flowers we must have, and if we cannot adorn our homes with the pretty annuals, then we will make them as cheerful and attractive as possible with the shrubs.—*Col. Curtis in Rural New Yorker.*

STANDARDS OF EXCELLENCE IN ROSES.

Mr. H. B. Ellwanger, of Rochester, N. Y., one of our most successful and intelligent rose culturists, says that a rose for general cultivation, which should stand high in the scale toward perfection, should excel in each of the following five points, and in the order named:

- 1st. Beauty of color, as that which first attracts us to a rose.
- 2d. Beauty of form, without which our eye cannot rest long, but wanders on seeking a combination of the two in one flower.
- 3d. Fragrance, deprived of which no rose can be perfect. Whoever yet saw a beautiful rose without wishing to inhale its odors? Gratification in this matter is oftentimes far more pleasing to us than the mere sight of beauty.
- 4th. Profusion and continuity of bloom. We like our good things in abundance, poured out to us with generosity, that we may have to distribute and carry our pleasure to friends.
- 5th. Vigor and healthfulness of growth. That will produce strength of plant thriving with a moderate degree of care and attention, and that will endure the extremes of summer's heat and winter's cold.

As the best representatives of these several qualities, Mr. Ellwanger gives of the first, Abel Grand and General Jacqueminot; of the second, the globular formed rose, Alfred Colomb; of the third, La France and Louis Van Houtte, as being alike "supreme in beauty and fragrance;" of the fourth, General Washington, and of the fifth, John Hopper, General Jacqueminot and Baronne Provost.

A TUB OF LILIES.

Those who admire our beautiful water-lily—*Nymphaea odorata*—and cannot have a pond will find that much enjoyment may be had from an old wash-tub arranged after the following plan: No matter how warped or rough the tub is so it will hold water securely; a barrel sawed in half will do, though not convenient to move without handles. Set the tub up a little ways from the ground on bricks or blocks to preserve the wood, half fill it with rich garden soil, in this imbed the root, one is enough for a tub; fill carefully with rain water so as not to wash holes in the soil; more water must be supplied when needed, to restore that lost by evaporation. Some of the common duckweed or any other small water plant and some minnows in the water, would aid in keeping it fresh until the lilies became established.

The birds are partial to this miniature pond, and if it is not guarded, will appropriate it for their morning bath—pecking and breaking the lily leaves. To exclude them take some shingles, saw them once in two cross ways, split the pieces into strips about an inch wide and tack them around the tub with brads, putting two brads into each strip; this forms a paling sufficiently firm and high to keep the birds off the edge of the tub and but few will have courage to fly down inside of it. The flowers of this lily are usually pure white, fragrant and semi-double; they open only in the forenoon and each flower opens for three successive mornings, it then closes and then sinks below the surface of the water to mature the seed. The plant remains in bloom from June to September. The roots if not obtainable from some neighboring waters may be found at most any of our reliable florists. It is probably too late to have the lilies if planted now bloom this summer, but preparations may be made for an early start next spring. In the fall when freezing weather begins the water in the tub must be allowed to dry down to the soil, the tub can then be moved to a cool, dark cellar, where the plants will keep perfectly through the winter.—*J. M. M. in N. Y. Tribune.*

June, 1879.

 PLANTS IN THE HOUSE.

 SMILAX.

Smilax is an exceedingly graceful vine, with glossy, green-ribbed leaves, and is now more extensively used than any other plant for decorating parlors, the hall, and for trimming dresses. With a little care it can be grown successfully as a house-plant. The vine does not require the full sun, but will grow well in a partially shaded situation. It can be trained on a small thread across the window or around the pictures. Grown from both seeds and bulbs. Pot the bulbs as soon as received, watering but little until you see signs of growth. They grow very rapidly, and should always have strings to twine on. Give plenty of fresh air, but be careful and not let a direct draft of cold air

blow upon the vines, as they are very tender when young. Give them a warm place, and they will amply repay all care. When growth is complete the foliage will turn yellow. Then gradually withhold water, and allow the bulbs to dry. They then can be put away in some dry, cool place. After they have been in this dormant state six or eight weeks they will begin to show signs of life, and then ready for another season's growth.—*Vick's Magazine*.

A WELL-MANAGED HOUSE PLANT.

The Massachusetts Horticultural Report mentions a very finely grown tri-color pelargonium exhibited by John Parker, who gave in substance the following statement of his treatment: In summer it is plunged in open ground in the garden, taken up, severely cut back and repotted in autumn, the old earth completely shaken from the roots. After January it is watered with liquid manure once a fortnight, made from a pint of hen droppings in two gallons of water, settled, and sediment rejected. The droppings are first scalded with boiling water to destroy any animal germs. Once a week the plant is dashed with water, and, if the weather is mild, in open air. The pots are washed once a fortnight, and the surface of the earth stirred with a fork. This was the treatment of a plant in a dining room, and the result was a brilliant display. Mr. Parker said that it was important to keep plants near the glass, in the full blaze of the sun, from January to May.

GLAZED POTS FOR PLANTS.

Glazed pots are condemned by most writers. The majority of these writers are green-house men, or those with but little experience with growing plants in the dry air of our parlors and living rooms; and in watering, those in glazed pots would naturally receive the same supply as those in common porous pots alongside. The evaporation from the porous pots would take place much more rapidly than from the glazed, and the one would be comparatively dry while the other would be still wet. The next watering repeats this process and the result is quickly seen. The plant in the glazed pot perishes at once, or drags out a sickly, miserable existence. Glazed pots can be used with good results in the parlor or living room. If the drainage is good, so that the surplus water can pass off, there are many plants that will grow well in them. To this may be added that many people are very irregular in watering house plants. They forget to attend to it until the dry and parched appearance of the earth admonishes them of their neglect. Of course the plant in the unglazed pots suffers worst under this treatment, for the earth gets dry from top to bottom, while in the glazed pot, the great bulk of the earth being protected from rapid evaporation, may remain comparatively moist, though the top is dry.—*Journal of Chemistry*.

TREATMENT OF IVY.

A recent writer says: If ivy plants that have been kept indoors during winter be put in the ground on the north side of the house for the summer they will

be benefited by the change. Such treatment renews the strength of the plants, making them better for house culture the following winter. The ivy is so hardy that it will bear being put out of doors very early in the spring. I find it better not to take the plants out of the pots, but to "plunge" them. A little common lime put under the pots serves to keep earth worms out. When ready to remove ivy plants to the house in autumn, replant if necessary, but in pots only a size larger than those they are taken from. The scale insect that sometimes infests these and other hard-wooded plants can be destroyed by washing in soap-suds, but they must be rinsed immediately after in clear, soft water. The ivy must be kept free from dust to preserve the rich gloss of its leaves. Ivy plants should have the support of trellises, to which they can easily be trained in any form to suit the taste.

PLANTING A FERN CASE.

In planting fern shades made wholly of glass, it is a good plan to lie down a good depth of broken flower-pots, or clean cinders of the size of walnuts, and to supply at first enough water to fill up as high as these, so that when filled the water may be heard to rattle among the crocks if the pan is tilted on one side. By lifting off the glass every day for an hour, the exhalations are got rid of speedily, and the ferns are constantly supplied with what rises through the soil by capillary attraction. Success in these matters often turns on points of management that appear trifling, therefore it is well to set forth the mode of planting a fern case.

If the case be intended for a winter ornament, it should be planted in July or August, that the ferns may be established before the decline of the season; and if they are evergreen kinds, they will have plenty of time to throw up plenty of fine fronds, which the liberal supply of water from below, with regular ventilations, will render luxurious and beautiful; and before winter comes, the excess of moisture will be gone, but the soil will hold enough to render watering quite unnecessary until spring. In the case of a large pan, say six inches in depth, the planter should lay down two and a half inches of drainage, and the top stratum should consist of very small stuff, not larger than hazel nuts. On this should be laid a thin coating of half-decayed moss or sphagnum. Fresh green moss is apt to go sour or breed fungi, and therefore it is preferable if it has been for some time exposed to the action of moisture. The next step is to fill up to the level of the rim with a mixture of turfy peat, leaf mould, small broken charcoal, and the siftings with plenty of silver sand. As it is well in the case of young beginners to be as exact as possible, the compost in which the ferns are to be planted should be pretty nearly as follows: Peat three parts, leaf mould one part, silver sand one part, broken charcoal and crock siftings one part. The compost should be broken up and mixed with the hand, and should be in a free lumpy state. Ferns rarely prosper when the compost is sifted, as it becomes too closely set, and stiff; but a little of the finest of it should be put aside to dress the surface with, when the planting is completed. The new process is one strongly recommended, namely this: Take a can of boiling water, and water the soil till enough is supplied to rise to the top of the drainage. The water should be poured into the center first to warm the soil gradually; if poured against the glass suddenly it may shatter it. This should be done carefully, and with a

little caution, there is no risk. The use of the boiling water is to destroy any insects that may have escaped the planter's eye when making up the compost. It will not only do that, but it will kill their eggs also, and equally make an end of the seeds of the weeds and the mycelium of fungi; all of which are enemies better got rid of at first than to be hunted for when their ravages become a source of alarm.

When the pan is nearly cold, the ferns may be planted, and the process of planting will consolidate the compost, so that it will, when all is finished, be an inch below the edge of the pan, as it ought to be; it may indeed go below that, and need filling up with some of the finest of the mixture, which should be sprinkled over as a finishing touch.—*Land and Water*.

CUT FLOWERS.

FLOWERS FOR THE TABLE.

Set flowers on your table—a whole nosegay if you can get it, or but two or three, or a single flower—a rose, a pink, a daisy, and you have something that reminds you of God's creation, and gives you a link with the poets that have done it most honor.

Flowers on the morning table are especially suited to them. They look like the happy wakening of the creation; they bring the perfume of the breath of nature into your room; they seem the very representative and embodiment of the very smile of your home, the graces of good morrow; proofs that some intellectual beauties are in ourselves or those about us, some Aurora (if we are so lucky as to have such a companion), helping to strew our life with sweetness, or in ourselves some masculine wilderness not unworthy to possess such a companion or unlikely to gain her.—*Leigh Hunt*.

FLOWER DESIGNS.

There are many beautiful ways of arranging flowers besides in our costly vases. For example, take a basket and knit a strip of different shades of moss-colored worsted; then dip in hot water and press them; when dry ravel nearly out, only leaving an end which can be fastened on to the basket with sewing silk, or green glance thread and a large needle. A basket tastefully covered in this way looks as if it were made of moss and retains its beauty longer; a tin dish should be made to fill it and painted green; keep it filled with natural flowers; such an ornament is nearly as beautiful as costly porcelain.

To form a pyramid of flowers, take three, four, or five wooden bowls, according to the size you wish for your pyramids; let there be a regular gradation in the size; procure some round pieces of wood like ribbon blocks, graded in size; glue the tallest into the center of the largest bowl, so that it will

stand upright, and upon top of that glue the bowl next in size, and so on to the smallest bowl. Varnish the inside several coats, paint the outsides green and cover with moss; some have a stand made and glued to the bottom of the largest bowl. When filled with flowers it is a lovely sight.

Baskets made of tin and painted green, then covered with moss, make the prettiest hanging baskets possible. Tin rings large enough to surround vases, placed inside and made to hold water, with little wires across the top and painted green, when filled with flowers, form the prettiest mats in the world; the wires keep the flowers in place. A very pretty one can be made if filled with rosebuds, forget-me-nots and geranium leaves. It is an improvement to cover the outside with moss. Crosses made in the same way are very beautiful and appropriate to place on the grave of a friend. There are many ways of arranging flowers. Even the poorest can afford to purchase a tin basin, and with a little common paint and moss, which can be found in all country places, a pretty dish for flowers is soon made. Shells make lovely vases. The large shells that are polished so exquisitely, that have been spoken of before, make lovely vases.—*Household*.

LANDSCAPE GARDENING AND ARBORICULTURE.

BEAUTIFYING THE FARM.

After a proper selection of trees comes the very important point of setting them in proper places and taking good care of them. If the paths are curved and not straight, that is if we follow what is termed the mixed style of gardening instead of the formal, trees should in no case be set in straight lines. There should be no attempt to place two trees or groups of trees in a way to match or offset each other, like the two eyes, hands, or feet of a person.

Straight lines belong to the formal style of gardening, which is also called the geometrical style, or Italian style. Here we may have terraces, straight paths and drives, trees symmetrically arranged and formally trimmed. This style will not bear neglect. It requires much work to keep things in order. It is not suitable for the farmer. He should choose the mixed style.

WHERE TO SET TREES AND WHERE NOT TO SET THEM.

There must be some open places of some extent without trees, flower beds or shrubs. This will be the most beautiful part of the lawn, without which no place is complete. Single specimens should not be scattered here and there all over a place. Some of the trees should be placed in irregular groups; a few may start out in the vicinity of the groups as single specimens. In setting trees care must be taken to leave now and then views open to the more desirable parts of the outside world. The groups and single trees should also hide any undesirable objects or views. If there is a broad extent of territory with no undesirable views it will appear more interesting if somewhat interrupted by planting trees. As a general thing there should be trees or shrubs placed in the angle where two drives or paths separate, also next to a rather sharp

curve in a drive so it will appear as though the drive was made to go around the trees. It is bad taste to plant close screens along the sides of the drives, unless there is some very disagreeable view to cut off. Even then it will usually be better to cut off the view by irregular and broken groups.

Trees should not be set near a house; large trees not nearer than thirty or forty feet, especially on the south and east sides of the house. In planting the farmer often forgets that the Norway spruce, Scotch pine, white pine, hemlock spruce and others, will some day become large trees, if they live and thrive. He sets a little spruce near the house or before the window, not thinking what a change ten or twenty years will bring forth. The trees grow; he becomes interested in them. They move upward and outward a little each year. They seem like dear friends, and although they shade his house and shut out the light and the view, he is loth to remove them. They run up in a crowded position. The bowed limbs become thin and scraggy and the tree loses much of its beauty. The owner doesn't know what to do. If cut down, there will be an open space so the unsightly thing is allowed to have its own way. The best way then, is to look ahead a few years and only plant pine trees where they may be needed twenty years hence. For immediate effect, if the man has plenty of nerve, it will do to set trees of almost any rapid growing sorts in quite thickly. This should never be done unless the owner thinks he has a will strong enough to remove the poorest trees as soon as they begin to crowd and before they injure the choicer specimens. The balsam fir is very good to mix in with other trees, as it is a beautiful tree till about seventeen years old, then it grows slowly and the lower limbs begin to die. It may then be cut out to leave room for more beautiful trees.

CULTIVATION OF TREES.

We will suppose the trees have been well planted and that with this operation the interest of the owner will not cease. Let him run a one-horse cultivator around among the trees, keeping the land well tilled for a space of at least eight feet from the trees. Let him cultivate all summer for the first four or five years, until the trees get well established. It will do him good and every one else who sees them to observe their thrifty growth. After this cultivation the land may be left to grass without any harm. On very strong land the cultivation will not be needed for as long a time as on thinner or poorer land. Trees may be mulched instead of cultivated, but the mulch should be five or six inches deep and extend five feet each way from the tree. If well cultivated, especially early in the season after they are planted, there will be no need of mulch.

THINNING EVERGREENS.

For screens to the southwest of the barn or dwelling house, the evergreens may be allowed to have their own way without any trimming. For some reason or other, I hardly know what, there is a common notion that evergreens should not be trimmed or will not bear trimming. There is no greater mistake. Many trees when standing by themselves with plenty of room cannot be improved by trimming. This beauty generally arrives at its greatest perfection in twelve to twenty years, depending on the kind of tree. To keep evergreens beautiful with a thrifty look for a long time they should be trimmed. This trimming may be done in spring or summer, or in fact at any time of year. Clip the young branches with sheep shears or a pruning knife.

I dislike as a usual thing to see evergreens formally sheared. I prefer to take off limbs a little irregularly, generally cutting back to a crotch. This trimming will keep the tree thick or dense, a point admired in all evergreens by most people.

The white pine, especially where it grows rapidly, is as much improved as any evergreen by pruning. Spare the lower limbs most to the ground; cut most towards the top. Cut a few limbs in summer and see how the young buds form for the next year.—*Prof. W. J. Beal.*

RED PAINT IN HORTICULTURE.

Red paint may be made very useful in a small way, especially in making conspicuous such small articles as are liable to be lost. The handles of trowels, weeding forks, pruning knives, and all such small implements, if painted bright red may be very readily found when dropped in the grass or otherwise mislaid. But flower tubs, hanging baskets, and many other things, which should be as inconspicuous as possible, are now very often painted the most positive and staring red, which makes them appear obtrusive and to force themselves upon the attention, while the plants they hold, and to which they should be secondary, are rendered less noticeable.—*American Agriculturist.*

COUNTRY ENJOYMENT.

A late writer says "farm life is prosaic." It need not be. There are infinite resources for intellectual enjoyment within reach of the country resident. He has always a broad landscape and a sky with ever-varying clouds before him. Beautiful trees with their masses of rich foliage; curiously formed plants in profusion at his feet; the constant work of the great laboratory of nature for his examination; flowers, minerals, insects; the melody of morn at his rising; the "glorious splendor of the sunset clouds" at evening; and every operation during the day, in the germination of seeds and the growth of crops on the farm or in the garden, are all ready for his study in the physiology of organic growth. The comparative cheapness of his land allows him to plant a small landscape garden at little expense. A room set apart in the house for a museum, in which he or his children may deposit their collections of dried plants, and of minerals, and of insects, and study the transformations of sluggish worms to glittering butterflies,—these and a thousand other resources for study are always before him, to occupy the few leisure minutes or hours he may have to spare. For a growing family, what can be more delightful than an occasional holiday ramble through woods or on the banks of streams, the collections of wild flowers, or the pencil sketches of old twisted trees, of mirrored streams, wild rocks, or blue hills? This is certainly less prosaic than the cramped visions of brick walls and stone pavements of cities.

J. J. THOMAS.

THE YELLOW WOOD.

I confess to a very decided preference for the old liquid, musical name, *Virgilia lutea*, as botanically applied to the tree commonly called Yellow Wood. But the proper authorities have declared for the more difficult and rasping name, *Cladrastis tinctoria*, so we must even submit. Whatever may be said of the name, however, the *Cladrastis tinctoria*, or Yellow Wood, is worthy of much praise for its many excellent qualities as an ornamental tree. Why it is not used more I cannot imagine. Unquestionably it has been widely known for at least 50 years, having been noticed by Michaux at the very beginning of this century. It abounds chiefly in Tennessee, associated with the Kentucky Coffee Tree, Red Mulberry, Walnut, etc. The wood is, of course, of a deep yellow color, whence the name. In branching, leafage and flowers, our specimen is simply admirable, and is only a fair example of a Yellow Wood of its age, grown under tolerably favorable circumstances. The smooth and slightly wrinkled, light-colored bark swathes the rounded growth of trunk and wide-spreading branches in a way that makes one think of some agile, clean-limbed animal. It is literally a tough, brittle-wooded tree, of very eccentric growth, picturesque in both trunk and branches. The leaves are those of a leguminous plant, light-green, small and by no means thick, but growing rather on the outer parts of the branches. As the light falls on it at times, we might think it a round-headed, large-leaved Locust, were not the branches and trunk so distinctly characteristic.

The crowning beauty, however, of the Yellow Wood is its flowers, which, unfortunately, do not come every year by any means. But they do not need to be scarce to render them precious, for their beauty is an all-sufficient recommendation. Seen under favorable lights during June, these blooms, hanging in loose trusses, white and Wistaria-like, are worthy rivals and mates for either the Laburnum or Wistaria. Their effect is also much enhanced by the peculiar light foliage and rounded formation of the tree.

Indeed, I am confident that if people would only seek out and realize the beauty of the Yellow Wood, it would require but a few years to secure well-developed specimens on numerous lawns; whereas now it is a rarity and wonder wherever seen in positive excellence.

SAMUEL PARSONS.

ORNAMENTING FARMS.

The farmer is looked upon as an exceedingly practical man, so much so that he neglects the encouragement of any disposition towards the ornamental in his prosecution of methods tending to the development of what is useful. In his dress he is supposed to be plain and practical; in furnishing his house he must, of course, avoid all ornaments that have no use in the economy of the business of which he is the head. This we have said as coming from people who look at farmers but are not in sympathy with them.

Still with this idea so prevalent, as one travels over the railways of Michigan and takes notes of the farm-house surroundings, it is a rare exception to find a single farm on which something has not been done toward the ornamenting of the premises. And in the aggregate there is an immense expenditure upon the farms in our own State that has no other object than the adornment of the premises. In some cases we see the tendency outcropping in the planting

of large lines of trees in the door-yard; in others shrubs, evergreens and flowers are scattered about in profusion, and often the disposition shows itself in a house covered with ivy, while again the only ornamental exhibit may consist of weathervanes upon barn, house and gate-post.

There is, notwithstanding the thought that farmers are merely practical, a desire for securing something about the premises for adornment, in almost every farmer. This we are thankful for. It shows an appreciation of something higher than the gratification of the stomach and securing a good bank account.

But in gratifying this desire there is so great a waste of time and money and material and so little that is valuable for the outlay made, that we feel there should be a good deal of effort made in the education of taste in these matters of home adornment. We certainly have great possibilities in the development of a beautiful country, because in Michigan there is so wide a range of plants and shrubs and trees that can be employed; our landscape naturally is quite beautiful also, and all that is needed to make our country as beautiful as any in the world is the exhibition of proper taste in developing ornamental farms. We do not care to discuss the money value of tasteful surroundings. It is enough to know that there is an innate desire among people to beautify their homes for the sake of having the beauty as their own, no matter how much or how little it may enhance the selling value of the premises.

It is not a new thing to hear of "village improvement societies," where uniform measures are adopted by whole villages to make the towns beautiful and attractive. There is a greater need for such societies in the country where the best taste can be brought to bear upon a grander scale, and with much greater possibilities. There is nothing in the realm of landscape art that possesses the grand beauty that can be put into a fine farm and its surroundings. And again, there is no place where good taste and artistic skill can be carried out with so little expense. What we need is education in practical matters connected with the development of tasty farmhouse surroundings, so that every dollar or day's work expended shall go for all it is worth.

The suggestion comes too, that often the exhibition of the desire to ornament, is confined to a small patch of ground in front of the house, which is in strange discordance with the remainder of the place. We call to mind a few premises which through a simple arrangement of trees, a delightful green lawn, a good choice in paint, for the house, well-kept fences, and an appropriate distribution of groups of trees over the farm, with a wood pasture not far away from the house, make up a delightful arrangement, which gives character to a whole neighborhood, all at almost no expense beyond what would naturally come in the prosecution of business farming.

We do not expect every farmer to become an expert landscape gardener, but we may readily expect from a careful discussion in farm gatherings of topics concerning farm adornment, the development of greater skill in the expenditure of time and money in beautifying country premises. S. Q. LENT.

LAWN GRASS.

Instead of the various lawn-grass mixtures, we believe in the use of simple red-top seed, together with a very little white clover; and when it is applied (during quiet hours of the day that it may fall evenly), two or three years

should suffice to grow a thick, velvety turf. Weeds are the great enemies of good turf, and every lawn should be kept as free from these pests as a flower garden. The employment of good artificial fertilizers greatly helps to secure permanent freedom from weeds, since foul weed seeds cannot very well lurk in them.—*Scribner's Monthly*.

MY LAWN.

A year ago I wrote an account of my plan for securing a lawn out of a rough piece of ground close about the house that had been allowed to grow up to brush, bouncing betts, and weeds. I will recapitulate a little and tell you of my success. I turned under the brush, weeds, and rough sod, gave the ground a thorough cultivation and planted to garden truck, securing excellent vegetables for the table, and by good culture a thorough subduing of the land. Everybody criticised me upon the taste displayed in having a vegetable garden in the front yard, but all conceded the good character of the vegetables. Late in the autumn, after the corn was husked and other fall work out of the way, with the team and tools in one day we put that fifty rods of ground into a smooth, nice condition for seed, and in another day a drive was made to the barn, a walk to the front door with a nice border of sod on either side. Fortunately, the gravel for the walk and drive was within a stone's throw, so it could be scraped into place at slight expense.

But what I wish to speak of particularly is that the vegetables, at the low prices paid last season, paid for fitting the lawn and building the drives. Every day I see farm yards that are eye sores which in the same manner could be converted into beautiful lawns, the actual expense being nothing and the result a satisfaction beyond computation. This spring I sowed thickly upon the prepared ground a mixture of Kentucky blue grass and red-top, giving the whole a top dressing of fine compost, and to-day, while I write, a tint of green gives promise of the velvet turf I hope to have by autumn.

May, 1879.

S. Q. LENT.

ORNAMENTAL PLANTING.

LOW-BRANCHED LAWN TREES.

Is it generally understood that no lawn tree properly trained can be allowed to lose its lower branches? In a general way it is. Many people recognize the importance of this system of training lawn trees; that is, they recognize it in a limited way. They think a purple beech should be trained low, and a sugar or Norway maple high. On the other hand, the majority probably give little thought to the matter when they come to plant their lawns. Let us consider the question a moment. It would be, perhaps, generally conceded that the most perfectly grown tree is the one that attains the most pleasing and com-

plete development of its normal or natural habit. But trees, we know, always branch low under the most favorable conditions; therefore we are safe in retaining the low-branched form on the lawn. Other considerations, likewise, favor this treatment. The stem is thus protected from injury (cracking, etc.,) from the sun and wind, and the uninteresting naked stems or trunks, often masked imperfectly with shrubbery, are thus done away with entirely. One of the most perfect specimens of any tree I ever saw was a Norway maple planted on an open lawn, where its contour from ground to summit was one grand swell or sphere of rich green foliage.

Surely, in view of such facts, we need not adhere to the old method of training all trees into a naked stem devoid of foliage. There is no lawn tree that is improved by such treatment, and only the exigencies of sidewalk or road can excuse such barbarous treatment of our noblest trees.

SAM'L PARSONS, JR.

JUDICIOUS PLANTING.

Shade trees are often planted too near to our dwellings, and too thickly, so as to make the house dark and damp and cheerless. Large evergreens are very much out of place on the sunny side of a house, while they form an appropriate screen and wind-break along the cold and exposed sides of our buildings. Set out trees—it is a duty—but set them out judiciously.

TREE PROTECTION.

Not protection of trees, but protection by trees, is what we mean, and to one who stands behind a thick Norway spruce and is perfectly shielded from these searching March winds, we need use no argument. It is a very easy thing to grow a shelter-belt of evergreens for a barn, a house or a garden. The trees can be purchased for a mere trifle, and planted out this spring. Five years of growth will make large trees of them and the protection rendered is a wonderful acquisition. A correspondent of the *Prairie Farmer* speaks thus encouragingly of the practice:

If the farmer has a barn, and a fence around it, let him plant, outside of that fence, a row of evergreens, closely together, so that nothing can injure them, and in a few years he will have such protection from the storms for his stock that no money could induce him to remove the trees. We know this to be a fact, and we further know that where such a "wind-breaker" exists, no shivering stock is to be found. Of course we would not have these trees all around the barn, but just at those parts where storms are most prevalent, and where farmers have no barns, or protection by buildings, and wish to have protection in some way, let them select some suitable field, and hedge it in with the same kind of trees, in the same way they would their barn yards; they will meet with success, as every person who has tried the experiment knows. Let these wind-breakers be planted during the coming summer, and in a few years no farmer will complain of having no protection for his stock. Farmers, wherever we are, let us look to our interests and reap the benefits of these wind-breakers in protecting the animals from the cold winds of winter.—

S. Q. LENT.

THE CLINTON GRAPE ON A DEAD TREE.

The Clinton is despised by some as being too sour; and considered worthless by others as too small; but it is a valuable grape for jam, and also for vinegar. I am fond of it for eating, as its spicy, sweet juice is very agreeable to my taste. "Sweet?" I hear asked, "how can that be said of a Clinton grape?" Well, let them get almost "dead ripe," as we say, and particularly after a frost or two, and then all who partake who do not find them "sweet" have a different taste from mine. In the latitude of 40° I have had them all through the month of October, but they did not begin to get their agreeable sweetness till about the 10th of the month. Having a mulberry tree growing near some vines, I girdled it and let it die. Up this the vines have clambered, overspreading its dead limbs, giving them a new, larger, and more dense foliage. The fruit on these is superior to that on trellised vines growing on the same kind of soil near by. Some of these grapes are half an inch in diameter, and the clusters are extra large. Festooning vines on trees still prevails to a considerable extent in Italy, the same as in the time when Virgil wrote his georgics. The best way to eat the Clinton is to mash the fruit in the mouth, throw out the skins and seeds, and swallow only the luscious juice. This is equivalent to sipping a pleasant "must"—the unfermented juice of the grape.—*T. R. in New York Tribune.*

CLEMATIS.

Within the last ten years the hardy Clematis has been wonderfully improved and the newer sorts now in cultivation are justly regarded as the most beautiful and striking ornaments known for garden decoration. Contrary to the general impression the severest winters do not injure them when slightly protected with straw or leaves. In order to induce a long succession of bloom liberal culture is absolutely necessary and a deep, well-drained soil consisting of loam, rotten manure, and leaf mold is the most suitable to plant them in. During the warm, dry weather in summer, liquid manure may be given them advantageously, and every year the surface of the ground around them should be mulched with manure to keep up their strength. The Clematis is a gross feeder and must be fed well to flower freely.

It may be used in many ways, either trained on verandas, walls, or trellis-work, or planted, in rockwork or rockeries, or they make superb single specimens on the lawn, trained to some ornamental support. They may also be employed as permanent bedding plants and pegged down like the verbena, or with a wire support of neat design raised about a foot from the ground—to run on—very pretty beds may be formed. On trees and arbors their showy and handsome flowers are very effective.

W. C. BARRY.

ROAD-SIDE ORNAMENTATION.

Country road-sides are usually unsightly and unprofitable. They are often a refuge for stones, weeds and briars, or a tramping ground for teams in muddy weather. Under most of our State laws a "supervisor" or "path-master" is chosen for each road district, by vote, each spring. The position is no sine-

cure. It brings no pay except for labor, and is therefore often taken in rotation by all the farmers in a district, and so all sorts of men hold the office. But the supervisor is "monarch of all he surveys." He can order out the property-holders to work on the road when and where he will. He can run the ditches straight or crooked. He can cruelly plow into your nice turf in front of your very house-lawn, if he chooses. "His right there is none to dispute." Add to this the fact that in spring and fall, when roads are muddy, every man that rides or drives on the road is also an autocrat, and can poach up your turf the whole length of your farm, if he will, and it is plain that road-side ornamentation in the country is not an easy thing, even if one sets about it. Formerly, too, cows and hogs roamed the streets, but now that nuisance is almost everywhere abated. People began to see that since each farmer pays for all highways running through or past his farm the same price per acre as for the rest of his farm, and pays yearly taxes on them, too, his neighbors plainly have no right to use *his road-sides for their hog yard or cow pasture*. The public have a right to the proper and necessary use of them for travel, and nothing more. All else belongs to the land-owner. It logically follows that the latter has the right to improve and ornament his road-sides, and reap all benefits arising from such improvement; also, that the supervisors and the traveling public have no right to hinder his doing so. But how shall we prevent their ruining our road-sides by driving on them in wet times? Some throw down rails and chunks, but the irate and independent public will jump out of their wagons and throw the rails aside with a jerk and an oath.

I know but one effective way, and that is to do what should be done anyway, viz.: set a row of shade trees on each side of the road, about six feet from each fence, and double stake and guard them while young. The laws in most States give the right to plant and protect thus. The trees will not only be a great ornament and blessing themselves, but will make it possible to have a lawn-like strip of grass, uncut by wheels and hoofs, all along the road-sides. Most of our country roads are about 60 feet wide. If, now, we allow 32 feet for the turnpike, or road-way and ditches, there remains room for a nice grass plot, fourteen feet wide on each side. But with a row of trees, well guarded by stakes, running nearly through the middle of each, it will be impossible for wagons to drive there. And with care, a nice, straight, smooth strip of grass may be had, which can be mowed twice a year by the farmer with good returns in cash, and in improved appearance.

W. I. CHAMBERLAIN.

Summit Co., Ohio.

A LIST OF THE NATIVE CLIMBING PLANTS OF MICHIGAN.

Not being able to meet with you I have prepared very hastily the following list of native climbers.

It is very interesting to observe the various methods these vines have of getting themselves up in the world and according to their different habits and behavior in this regard they may be divided into four or five sections as follows:

SECTION 1, *Root Climbers*. One species climbs in this manner—the Poison Ivy or *Rhus toxicodendron*. All are doubtlessly personally acquainted with this very poisonous vine.

SEC. 2, *the true twiners*. This division comprises the larger part of our native vines—and may be divided into two sub-sections:

I. Woody climbers. II. Herbaceous climbers.

There are four species and one variety in the first sub-section:

1. Shrubby Bittersweet or wax work,—*Celastrus scandens*.
2. Canadian Moonseed,—*Menispermum Canadense*.
3. Hairy Honeysuckle,—*Lonicera hirsuta*.
4. Small Honeysuckle,—*Lonicera parviflora*.
5. A variety of No. 4,—*var. Douglassii*.

The herbaceous twiners comprise six species:

1. Ground nut,—*Apios tuberosa*.
2. Hedge bindweed,—*Convolvulus sepium*.
3. Wild Yam,—*Dioscorea villosa*.
4. Hop,—*Humulus lupulus*.
5. Fringe-jointed Polygonum,—*Polygonum clinade*.
6. Climbing Buckwheat,—*Polygonum dumetorum*.

SEC. 3, *the Leaf Climbers*. Contains two species:

1. Virgin's Bower or Clematis,—*Clematis Virginiana*.
2. Climbing Fumitory or Mountain Fringe,—*Adlumia cirrhosa*.

SEC. 4, *the Tendril Climbers*:

1. Summer Grape,—*Vitis æstivalis*.
2. Frost Grape,—*Vitis cordifolia*.
3. Frost Grape,—*Vitis riparia*.
4. Virginia Creeper or five-leaved ivy,—*Ampelopsis quinquefolia*.
5. Green brier,—*Smilax hispida*.

SEC. 5. Contains but one species:

1. Climbing or Prairie Rose,—*Rosa setigera*.

C. F. WHEELER.

Hubbardston, Ionia County, Mich.

ORNAMENTING SCHOOL GROUNDS.

THE SCHOOL GARDEN.

Appropos to the special attention given to the above general topic is the following extract from a translation of Prof. Erasmus Schwab, by Mrs. Horace Mann:

One demand is, deeply dug, well arranged and sanded paths, which shall always be kept clear and in good condition by the children of the upper classes. A school garden which would comprise everything desirable (that is, such a garden as should be appended to institutions for the training of teachers) should contain

1. A selection of the characteristic plants of the plain and meadow, mountain and wood of the given country.
2. All home evergreen and foliage trees; at least one sample of each, and all the more important wood shrubs.

3. A seed nursery for fruit, a nursery for the improvement of wild stock and quinces, a collection of berry fruit and a nursery for them, plantations of precious fruit trees, and especially of dwarf fruit trees, and where possible a trellis for wall fruit and grape vines.

4. An agricultural "experiment garden" of several square metres—that is, an agricultural botanic garden proportioned to the circumstances of the place.

5. In the borders around the "experiment garden" there should be a collection of economical and technical plants of the home region; stalk fruit, hoe fruit, leguminous plants, and fodder plants, as far as they do not belong in the "experiment garden;" also aromatic, medicinal, and commercial plants of all kinds.

6. A collection of the chief poisonous plants of the home region.

7. A little kitchen garden with hot-bed or leaf-bed and beds for planting out. The leaf-beds are made in boxes and covered with glass, and are good both for raising seeds and planting slips. They can be used in a window or over an oven or stove, and are made of red clay, which absorbs warmth from the sun even if the glass cover is shaded.

8. In small beds, or singly, flowers, high-bush roses, ornamental shrubs and perennials.

9. A beehive in a distant part of the garden.

10. A small plantation of mulberry trees and bushes (in southern regions); and where it is practicable, a large water basin. A fountain belongs to every school.

Since the school has patriotic aims—that is, to build up an army ready for defense and capable of enthusiasm, there should be a gymnastic ground in the neighborhood of the school-house. If this can be within the school garden, it has, like the covered gymnastic hall, found its most beautiful and appropriate location.

THE CHILD'S GARDEN.

Every young creature of the human race descended from Adam shows its garden origin by an instinctive love of stirring the soil in the season of vernal sunshine, and of planting in it seeds and shoots. It should be the business of those who are placed where they are responsible for the future common weal, to see that all who are charged with the education of the youth of the Nation shall take especial care to cultivate this tendency. Above every other temporal thing it has power to secure health, peace and competence. A young man or woman who has learned to take interest in a garden and grow plants well, is secure from the worst enemies of life; secure of procuring food and clothing by direct means, if indirect ones fail; secure of healthful and contenting employment for mind and body, and of innocent objects of attention and interest, countless in number, and changing every day. Fortunate indeed is one whose early youth has been imbued with a liking for these pursuits and pleasures, and fortunate the society possessing such members. For they are not liable to fall into the unlawful courses which conduct the idle and the untrained into vice and crime, and make them the shame and the burden—and often the terror—of the industrious and the orderly.

Our schools must find some way to teach the eager little ones the principles of plant growth. Much can be done in a city school room with small pots of

soil, and seeds. In the country, where there are grounds fenced in, some sheltered part might easily be laid off and divided by narrow boards nailed on stakes driven down to keep them in place, into a row of little lots on each of which some easy-growing and productive plant may be set out to show what it will do when it has room, good soil, and sufficient support. On part of each lot the occupant for the season can try any of the experiments that children's whims suggest so freely. These will fail more or less, but their failure will be a lesson. The reason will appear: and the reason, too, why the strawberry plant (grown in a pot for setting out), or the radishes, or tomato (trained up a stake), or peas, or potato, or cucumber, or rose, have made such complete and profitable growth: these latter being protected and cultivated under the teacher's advice and care. Such instruction is given in thousands of schools in other countries. There is quite as urgent need of it here.—*New York Tribune*.

DECORATING SCHOOL GROUNDS.

The following article by Prof. C. L. Whitney, of Muskegon, was prepared for our series earlier in this volume but came too late, and we gladly insert it here.

It is an axiom in education that childhood is the most important period, for then the mind is most susceptible to the influence of the slightest impressions whether good or ill. Hence no system of instruction is correct that loses sight of this important fact, and knowing it, fails to supply the right kind of tuition.

It is equally true that the unconscious tuition given children is as important as the conscious instruction, hence every surrounding, every example, every object that takes the attention as well as every precept should be of the highest character and best calculated to produce the most pleasant sensations, to give the perfect preceptions of only these elements that aid to become lovely, conceptions of the pure, the good and the beautiful in nature and art; to be woven into the thoughts and words of life's happiness and prosperity, and man's usefulness to all his fellows and for the service of his God. Then how important that all the child's early years should be pleasant in surroundings and every object that the senses operate upon should be attractive and pleasant.

Such always should be the home of the early years of childhood that all instruction, unconscious or conscious—by precept and example should be the best—and the best calculated to give the greatest number of pure impressions to the virgin mind.

Next to the home and its surroundings and parents who control it, is the school and its adjuncts and the teacher who manages it. Next to the home the school claims the child's attention, and has to do with the child's health and pleasure. Is it not a matter then of importance that the school and its surroundings be well considered by those who would truly awaken the immortal capabilities of thought and judgment entrusted to their care in the persons of their children? Then, we have the best of reasons for the fervent plea we make for children and their future, when we ask that the grounds surrounding all public schools be ornamented with trees, shrubs and flowers, to make them beautiful and attractive—pleasant to the eye and inviting to all, even the

delinquent. That the house itself should be roomy and convenient, a beauty in architectural design, perfect in form and proportion, neatly and tastily ornamented and furnished with all the accessories, all models in the way of unconscious instruction, and conducive to convenience and comfort in their use—is not the question we aim to discuss here. We hope we may have such everywhere, and the bright hopes of the rising generation demand them and such as them.

But with what shall we surround the homes, for developing a longing for a higher and better manhood and womanhood—homes wherein, in the wisest manner, the inert capabilities of power shall be duly expanded, and become wise and loving guardians of human interests, and advocates of human rights, with an abundance of nature's rich and luxuriant treasures—grand, beautiful, useful. To have abundance, there must be room. The grounds of a school house should be large,—ample for the fullest exercise of taste in decoration. They should also be well located. We would select a site upon the west or north side of a road, with house and grounds facing the south and east; then a gentle slope toward the front, or a front corner, would be desirable, or if one side had quite a depression, with a spring brook along it or through one corner, so much the better—for it would greatly add to the natural capabilities of the place, and then rightly employed would make a successful undertaking of the work of decoration, besides giving a variety of surface and soil, and degrees of moisture suiting more varieties of trees, shrubs and plants.

No grounds should have less than one acre, and it might be better to have three and five acres. Buy now, while land is cheap and thus make a rich endowment for the children of coming years to use, when lands shall be scarcer and higher in price.

The size, location and natural features all being settled, next comes the planting. What shall be planted is an important question to be answered—easily when we know what are the greater objects of planting. We should, of course, plant for shade, protection and ornament; but may we not combine another object, namely, instruction? May we not make such school grounds a district and neighborhood arboretum? Yes, make it a place where every variety of tree, shrub and plant to be grown in the latitude may be found under its true name, and so grouped as to enable the student, whether child or adult, to become familiar with its different types and to classify readily all the varieties of timber and plant growth he may meet with in travel, and all without an extended course of study in the science of botany,—and would plant groups of evergreens on the more exposed borders in such a manner as to afford protection and shade, to temper the winter's winds and summer's heat, to prevent the drifting of snow, and the escape, too rapidly, of moisture.

This done, group the maples in one place, the oaks in another, and so on, putting the taller growing varieties in the rear of the house to form a background; the smaller growing varieties and larger shrubs could be interspersed among the higher timber to give the best effect, while here and there could be placed beds of flowering plants.

Your grounds would present a beautiful picture of a leafy background of tall trees with the lawn surrounded by groups of shrubs, animated by the presence of happy children and decorated by the bloom here and there.

Had we time we could, as soon could every child, tell you where grows the blue crocus, the fragrant hyacinth, the gandy tulip, and many others, that

come each spring to delight the eye—yes! and when the lily of the valley and the lonely violet seeks the shady brooks, when the twining vines make nests for so many birds,—and safe, because the children are their friends and protectors. The children will soon know of the clump of vines that form the bower in one corner and the wild shrubbery that grows so rank in another, and how sweet the perfume of the morning hour and how lovely the music of the feathered songsters that make their leafy retreats melodious. Such grounds in each school district would not only be instructive, but very attractive, and would in many locations be veritable oases—the pride of the neighborhood, the envy of those without them, and a place of resort to old and young.

Why not have them such? and not only the school grounds but the grounds of every grange and town hall and every country church—let there be room enough given to each, and then plant and care for the trees and shrubs until long enough to take care of themselves. Could we make the tax law of the State we would impose a tax upon every hall, church and school building whose grounds were not ample and well protected and decorated with trees and shrubs, also every man who did not plant trees along the roadside to give comfort to the traveller and protect his own growing crops. As the day is most at hand when forestry is to become a necessity among us, why not instruct, young and old, at once, both by precept and example, in the selection and planting of trees,—and where can such schools of experimental forestry be better located and be of greater advantage than upon the grounds of our public buildings, enduring lessons and perpetual monuments to those who plant and rear them? May not Michigan schools then move in this direction—inculcating a knowledge of the forms and habits of grouping and classifying in planting and imbibing of the beauty nature will give, while thus aiding her to place her floral gems before the eyes of all.

EVERGREENS.

VALUE OF EVERGREENS IN WINTER.

Walking out to-day in the bitter cold of a winter's morning, with the mercury at zero, thoughts in accord with the weather came to my mind. These thoughts naturally dwelt at first on the intensity of the cold, bleak wind, but as I passed suddenly into the lee of a grove of Norway spruces, my mind, sympathizing with my physical condition, turned to the value of evergreens in winter. Anything that could afford such delightful shelter in winter deserves mention in the highest terms. During the temporary luxury of walking in the lee of these trees, I made up my mind, as I had never done before, that every one should plant evergreens to the north and west of his dwelling. I fully realized at this moment their supreme value as wind-breaks, and wondered exceedingly why people did not always attend to this matter. Deciduous trees may be, and are, valuable and delightful on other parts of the lawn, but nothing can take the place of evergreens for the north and west.

True, few sorts of evergreens are suitable for wind-breaks. But if pines and spruces are disposed in an irregular belt or semi-circle, planted somewhat alternate-wise about the northwest corner, the borders, front and rear, might be varied by outposts of choicer specimens. Thus situated, fine evergreens could develop properly and exhibit their charms in their very best array.

Again, in the retired nook that would be left in the angle behind the wind-break proper, choice evergreens and other plants of low growth could be mingled with natural bits of rock-work, and the whole reached from the lawn by obscuring and winding paths. A varied and pleasing effect could in this way be given a wind-break, which otherwise would lose its attraction with the lapse of time. Large evergreens suited for shelter, pines and spruces, seldom retain for many years an appearance that is attractive close at hand. Need I exhort everyone to the practice of combining the useful and the ornamental in lawn-planting as in other operations? Hardly; everybody must already know the desirability of doing so. But perhaps everybody does not realize in actual practice how exceedingly ornamental a useful thing may be made.

S. PARSONS.

HEDGES.

HONEY LOCUST FOR HEDGES.

Some one inquired about honey locust for hedge, some time ago. I never grew a hedge of it but have seen them grown, and know they make a good hedge if properly managed. Here in New York, they are preferred to osage orange, on account of their hardness. Many object to them because they are hard to grow. The secret of success in hedge growing, of any kind, is care and attention during the first three or four years, and if this is given to honey locust it will make a hedge every time. The plants must be good ones, vigorous and thrifty, and should be about of same size; at least, put all of same size together, and not plant small and large ones promiscuously. Before setting make the ground along the line, rich and mellow. After setting out, the row must be cultivated and kept clean until the hedge is matured or finished. Let the plants grow the first year, undisturbed, and then cut them down to within three inches of the ground; second year, seven inches from the ground; third year, twelve inches; fourth year, eighteen inches; fifth year, twenty-five inches; sixth year, thirty-three inches; and seventh year, height desired for fence. This takes seven years, but the fence is good after the fourth year.—*Practical Farmer*.

THE JUJUBE TREE FOR A HEDGE.

W. R. Smith, of the Botanic Gardens in Washington, is reported as stating that the *Zisypheus vulgaris*, or jujube tree, heads the list of hedge plants. It

is in his opinion a much hardier tree than the osage orange, smaller in growth and not requiring the same amount of labor in trimming. Dr. Warder and others well informed on the subject pronounce in favor of the jujube tree's adaptability to the purpose recommended.

FORESTRY.

SHELTER BELTS IN ENGLAND.

That the English people are alive to the advantage of protection by trees, is becoming more and more patent year by year. Yet in England the winters are mild and equable. There protection is probably needed against the winds of spring which would tend to cause the fruit to blast. Here we need protection not only in winter and spring but at all times as against the sweeping winds which cause serious damage not only by blowing off and bruising the fruit, but in loosening and straining the trees as well. So also we are glad to notice that the English mind is beginning to see the evil effects of excessive pruning. This has long been known among the best cultivators of the west. The gist of the matter is contained in a short paragraph in the *Journal of Horticulture*, referring to a communication upon the subject. It says:

"In another column Mr. Luckhurst adduces examples showing the importance of shelter for fruit trees. We may add another instance that recently came under our notice of a splendid crop of apples, the result in a great measure of a sheltering belt of forest trees on the north side of the orchard. This fruitful young orchard is at Wimbledon, and belongs to Sir Henry W. Peek. Many of the apple trees are crowded with fruit, and afford a striking contrast to thousands of trees that are in other places barren. Since so much is written on the pruning of trees it may be mentioned that for two years the trees referred to have not been pruned at all, unless the removal of an occasional branch in its entirety can be termed pruning, and the trees are as handsome in form and fruitful in character as can be desired."—*Prairie Farmer*.

THE WESTERN CATALPA TREE.

So much has been said of late respecting this tree, and so many inquiries are constantly being made as to its deserts, that it seems best thus to present it to your readers in anticipation of a more extended memoir of the Shavanon, which is soon going to the press in a more permanent form.

This course, it is hoped, will prevent the mistakes that might occur in statements made by those who have not had such extended opportunities for personal observation as have been afforded the writer within the past few months in the course of travel over three thousand miles of our country, by an extensive correspondence with men of intelligence in twenty different

States, and by the examination of fruit pods and seeds, as means of diagnosis, that have been gathered from very numerous groups of trees in various places, East, West, and South—thirty in all.

HISTORY.

The genus, *Catalpa*, was made by the botanist Jussieu, the species, *bigonioides*, by Walter. This native of Georgia and adjoining States has long been known in cultivation as an ornamental tree all along the Atlantic coast, as far as Massachusetts, and in some places it has become naturalized so as to spring up self-sown. From the East it has been transported westward along the fortieth parallel of latitude, following the progressive settlement of the country, and has accommodated itself to the changes of soil and climate to a certain point, beyond which it is more or less affected by the winters.

Many years ago two trees were observed near Dayton, Ohio, that bloomed earlier and bore larger and more beautiful flowers than the others. They attracted the attention of Dr. J. Haines, who gathered their seed, and they were thus soon multiplied to such an extent as to become the summer glory of the streets of Dayton, and in 1853 this variety was named the "speciosa" by the editor of the *Western Horticultural Review*, a magazine then published in this city.

In 1825, in an address by Gen. Harrison at our county agricultural fair at Carthage, the catalpa was highly lauded, and the attention of farmers and others was forcibly directed to the importance of planting so valuable a tree. He referred to the catalpa as he had seen it near Vincennes, Ind., where he had resided as governor of the northwestern territory.

At that period he may not have known the eastern form of the tree, nor been aware that the kind he had introduced among us was at all peculiar, but he had learned from the French settlers there and from his own observations also that it was possessed of great value as an economical tree on account of its wonderful durability. He had used it when residing on the banks of the Wabash, and posts of his planting are still doing good service; he found it sound in the stockades and dwellings of the old French town, which was a trading post in 1702, and quite a settlement in 1735.

NAMING AND PUBLISHING.

Gen. Harrison's trees, planted at North Bend, Ohio, were a source of great pleasure to him, and though now all destroyed, their self-sown progeny have sprung up around the old homestead, and others of his distribution are to be seen in the neighborhood, but until recently they do not seem to have attracted the attention of botanists as being distinct from the eastern trees commonly planted.

As already stated, the distinctive characters of the western tree were first pointed out and published in 1853, but under the supposition that this was only a variety, perhaps, of limited range, for it could not be ascertained whence the two trees found by Dr. Haines had originated. Further observation has recently proved that they are of the western form, and that this catalpa is very distinct from the eastern kind, and, indeed, it may be a different species.

RANGE AND HABITAT.

This catalpa, now known as the *speciosa*, the early blooming, and toward the northern limit of its cultivation as the hardy catalpa, has its native hab-

itat on the wet bottom lands of the Wabash and its tributary, the White river; the lower Ohio and its tributaries, the Little Wabash, the Cumberland and the Tennessee. It is also found in the extensive swampy region of the Mississippi about New Madrid, in southeastern Missouri and the adjoining portion of Arkansas, as well as in the neighboring low-lands of the western portions of Kentucky and Tennessee, and on the Obion river.

In all this region of silty soil, a part of the great delta, the forests produce this particular catalpa, the locality being in these six adjoining States. It has also been found on the Red River, near the southwestern portion of Arkansas, and probably on most of the tributaries of the Great River, to which, however, these recent special investigations have not been extended. In all the territory above indicated, and which has been critically explored, the Speciosa Catalpa has been discovered in a state of nature; not one of the Georgia kind, the recognized type of the species *C. bignonioides* of Walter, has been seen, except where planted by the hand of man.

CHARACTERS OF THE TREE.

These must be given in popular rather than in botanical or scientific terms, and in words of comparison to differentiate it from the kind so widely planted and so well known as is the species (the Georgia tree) which has been spread eastwardly from the Savannah to Cape Cod, and westerly from the Hudson to the Republican Fork of the Kansas River, in Kansas.

Diagnosis—The western catalpa may be thus diagnosed in detail:

Tree—Tall and majestic in its native forests, sometimes reaching an immense size, with long logs and spreading tops, the limbs rather scattering, while the species often has short, leaning and crooked stems, and low, straggling branches, especially when standing alone, whereas the Speciosa, in similar situations, is erect and taller; though pretty well furnished with branches, these on account of the broad foliage are, however, less numerous than in other kinds of trees.

The bark—Is very characteristic, being snug and compact, moderately thick, and furrowed longitudinally, not disposed to scale off in thin plates as that of the species does after it has grown a few years, say ten or twelve; though it is true a few loosened scales may be seen on the bark of some old trees of the Speciosa, particularly where it is crowded at the points of branching of large limbs. The bark of the two trees may be compared in this respect to that of apple and pear trees of the same age and under similar conditions—the one scales off easily, while the other increases in thickness by retaining the outer layers.

Though perhaps unworthy of consideration as botanical characters, these peculiarities will be appreciated by the practical forester, and valued as important elements in his stock of wood-lore. His knowledge of trees is often brought into requisition, and he is required to identify them when the higher and more precise means of a botanical diagnosis afforded by the foliage, the inflorescence and the fructification are all wanting, and he is thrown back upon the more general characters of the form or habit, the arrangement of the phyllotaxy, the appearance of the bark, and even the color and grain of the wood itself.

Inflorescence—The flowers of the Speciosa are much larger and the color of the bell-shaped corolla is a purer white; the internal markings of purple and yellow are also more distinct. The blossoms open from two to three weeks sooner than those of the Eastern kind, which have also a violet tint pervading

the white of the corolla. As a merely ornamental plant the *Speciosa* is superior in bloom as well as in habit of the tree.

Fruit—The fruit-pods, often called Indian beans, vary in size and length on trees of either kind, but those of the western tree may attain the extreme length of twenty-four inches, and they are of a different shape when examined on the cross-section. This is cylindrical, while that of the Georgia kind is elliptic; the valves meeting form an angle, and their margins project so as to be perceptibly felt as a ridge when the fruit is rolled or drawn between the thumb and fingers. The pods of the *Speciosa* are usually of a dark brown color, and the valves are marked externally by parallel grooves that extend to their entire length. Those of the species, as in cultivation, are usually of a lighter color (rusty brown), and less distinctly grooved, in some scarcely indented by shorter channels.

Seeds—The distinctive characters derived from these curiously winged organs are the most reliable and constant, especially the arrangement of the margins and terminations of the wing or projecting membrane. In size the seeds of the *Speciosa* exceed both in length, breadth and weight.* The *coma* or tuft of hairs at each end of the seed of the species is compressed and pointed as though it had been wetted and drawn together, while in the Western kind they are separate, parallel and almost digitate.

The color of the membrane is also lighter in the Eastern kind, and the texture firmer and more satiny, while that of the Western kind is softer and more silky. These distinctions were first pointed out by the practical seed-handler, Mr. Robert Douglas, of the Waukegan nurseries, in Illinois, whose acumen as a judge of tree seeds is remarkable, the result of long experience and close scrutiny, particularly of the seeds of coniferæ.

Hardiness of the tree—This character is of the greatest importance to the practical and extensive tree planter, for though we may be willing to put up with a so-called half-hardy tree upon the lawn or in the ornamental plantation, on account of its beauty or rarity, the forester cannot afford to run any risks, and should only select such trees for his economical groves as have an unquestionable record in this particular.

Range—An approximate limit to the northerly range of these plants is all that can now be attempted, and many exceptional cases may be cited where individuals have escaped injury from frost even beyond the limits that will be indicated.

In Eastern Massachusetts there are old trees of the common kind that have stood for seventy-five, or, perhaps, one hundred years; and yet Professor C. S. Sargent, who kindly reported them, says that he "cannot recommend it as a forest tree for that region, except in sheltered situations, because it does not always perfectly ripen its fruit," which he very probably considers a safe test; and yet it is one that would preclude the planting of alpine heights in Europe that are now clothed with valuable timber.

The western kind has a few representatives about Falmouth, in Barnstable county, in the same State, as reported by the successful tree-planter, Jos. S. Fay, of Wood's Holl, Mass.

Westward from the Alleghanies the safe limit comes down to a lower range, as will be indicated by a few citations. At Toledo, Ohio, latitude 41, it is cut to the ground, and even at Dayton young trees of the common kind often suffer from the cold. In Michigan they generally suffer; at Fort Wayne, Ind.,

*25 seeds *Speciosa* (from Vincennes) = 11 grs.
25 seeds *Georgia* (from Terre Haute) = 9 grs.

in all northern Illinois, above La Salle, in Wisconsin, in Nebraska, and in Kansas north of the Kaw River, and in all Iowa it is considered tender, and it has been damaged occasionally even at St. Louis, Mo., in latitude 38.37° N. In all this region wherever the eastern form has been introduced it has been found more or less tender, and young plants are often cut to the ground. Therefore, the extensive planting of this tree, the type of the species, can not be urged anywhere beyond the fortieth parallel north.

The typical tree planted in France has suffered from frost in Paris, but succeeds on the shores of the Mediterranean, and also at Vienna, Austria. In Great Britain it has attained large proportions in the south of England, blooming in July and August about London, but not perfecting its seed satisfactorily. According to Loudon it becomes almost an herbaceous plant in Scotland, and requires a green-house at St. Petersburg, in Russia.

In its western form, whether this be a mere variety or a true species, the catalpa is sufficiently hardy to be planted north of latitude 42,—even on the bleak prairies of Iowa and Nebraska. A few trees have been grown in Massachusetts, near a stormy coast. It adorns the streets of Columbus, Dayton and other towns in Ohio, as at Indianapolis, Terre Haute, and even at Ft. Wayne, Ind. It lives on dry, sandy land at Ypsilanti, Mich., and at Waukegan, on Lake Michigan, in the northeast corner of Illinois, and thrives nobly at Princeton and other points of northern Illinois, where the eastern form has suffered; so does it survive and flourish at Muscatine and other parts of southeastern Iowa, even above latitude 42 degrees, and is found in Omaha, and the corresponding quarter of Nebraska, in all of which the normal type is tender, or at best but half-hardy, even under the more favorable conditions of shelter.

CHARACTER OF THE TIMBER.

In very early times the French settlers on the Wabash had gathered the information respecting the western catalpa from the Indians which it has taken the intelligent American citizen nearly two centuries to acquire. They learned that its timber possessed exceedingly valuable properties. The aborigines had found it easily worked, even with their imperfect tools. They appreciated its lightness and strength in the construction of their canoes, which enabled them to effect the portages from one stream to another. They found it durable where it had fallen across a stream and formed a natural bridge, of which an old Indian is reported to have said, "My father's father crossed on that log," giving it a duration on the ground without decay of more than four generations, or more than a century. The French were not slow to act upon the hint, and used it in the construction of their stockade and their habitations, which Gen. Harrison found in a good state of preservation. He also applied the timber to economical purposes, and urged the cultivation of the tree. Posts of his planting about the governor's residence at Vincennes are still in use, and likely to remain sound for a long time.

It is believed that all catalpa timber is durable, but heretofore the trees have been planted solely for ornament, and the habit or form of the kind selected was a matter of less moment than if looking to the economical application of the timber. Still, here and there instances may be found where the common catalpa has been used chiefly as fence-posts, which have stood well. But in the western forests its great value has been so fully appreciated by the early settlers and their successors, that the timber has now become

quite scarce in all accessible places, where, indeed, it has to be watched to prevent depredation. It is largely applied for fencing, and as supports under the corners of buildings, for bridge timbers, and other purposes where strength, durability and lightness are required, such as the sheathing and frames of small boats or skiffs.

The wood, being light and strong, also works easily under the tools of the joiner, and when well seasoned is very desirable for the inside finish of houses; in its tint and grain it compares favorably with some of our finest native ornamental woods. One of its most promising applications, on account of its durability, its peculiar constitution, presently to be mentioned, and the brief period required to bring it to a useful size, is that of material for railway sleepers or cross-ties. For this purpose, trees of twenty-five to thirty years' growth are large enough to yield four or five ties.

The peculiarity of the wood's growth just now referred to is this: The exceedingly and unusually small proportion of alburnum or sap-wood, that part of all trees which is most prone to decay—here reduced to the minimum, as but one or two layers or rings of latest growth are of this character in the catalpa; hence quite small trees, and even limbs, used as vine props and as fence stakes, have been found to last a long time. In making cross-ties, great economy may be practiced with this tree, because a log of twelve inches, instead of being hewed into one piece, may be sawed into two, that will have a wider bearing on the rail, while at the same time the convex side being next the road-bed, is more readily fixed by tamping than if it had been sawed or hewed to a flat surface. The engineers who have used this timber in railway construction speak very highly of it, and say that it holds the spike sufficiently well.

Durability—Many instances are known of the great durability of the catalpa, even where exposed to alternations of wet and dry, and to the action of the elements. The wood fibre seems to resist decay in a wonderful degree; logs that have lain upon the ground for a hundred years are still sound, and when sawed up the timber is free from rot, and will take a pretty good polish. Fence posts that have done good service for half a century, and in one case for three-quarters of that period, have been taken up in good condition, and have been cut up and finished as specimens for distribution by Mr. E. E. Barney, of Dayton, O., to whom belongs, indeed, the credit of now bringing this valuable tree before the public,—an act of disinterested kindness to his countrymen which is deserving of all praise.

The marvelous stories, heretofore looked upon as travelers' tales, respecting the durability of the trees near New Madrid, killed by the earthquake of 1811, have recently been verified by ocular demonstration. In the portions of the forests that were then submerged, and covered with water from three to ten feet deep, the dead catalpa trunks are still standing, but they stand alone; every other tree of the sunken forest has decayed and fallen, leaving these remains still standing in the water, and presenting the appearance of some strength. Specimens have been secured for Mr. Barney, who will subject them to physical tests and report the results in his forthcoming pamphlet.

Of the railway that passes through this region, a portion had been laid with catalpa ties, and has been in daily use for eleven years. These are still sound, while the oak ties beside them have been twice replaced. They are laid upon the silty mud of that low bottom land, subject to overflow, and with no gravel or metal for tamping, consequently they can never be absolutely dry.

Indeed, one very intelligent observer in Southern Illinois, where this tree is native, asserts that posts seem to last longer in wet places than in dryer soils.

The sum of this report is that we have two distinct catalpa trees in the United States, one of which, the subject of this article, is of western origin, is a finer tree and more hardy, and, therefore, better adapted to forest planting, and may be safely planted over a wider range of territory.

DR. JOHN A. WARDER.

THE GARDEN.

HOT BEDS.

Rufus Mason, in the Cincinnati Grange Bulletin, says:

Three years' experience with muslin sashes where the thermometer ranges from 20° below zero to 70° above, satisfies me of their superiority. I make a square frame of 1½ inch stuff, with a single bar of same size down the middle, cover it with common, heavy, unbleached muslin, paint it over two coats, with boiled linseed oil and find it far better than glass. Have had no freezing or scalding, but better colored plants, more stocky, and better able to withstand early transplanting. After the hot-bed is filled with manure, lay in the soil so as to come within three inches of the muslin, sloping exactly as it does. As the season advances, the bed will settle about as fast as the growth of the plants require it. This plan prevents the plants from becoming long-legged, which is the main cause of the slow after-growth, and in the cabbage family, of so many plants failing to make solid heads.

STRAW MATTING.

The warmest and lightest covering for hot-bed sash, as a protection from very severe weather, is straw mats. These mats, says James Vick, are easily made, and one can employ his time upon them in very cold or stormy weather, when nothing can be done to advantage outside. In order to make a good article, and to work to best advantage, it is best to employ a frame, which may be made of two pieces of two-by-four spruce joist for the sides, of the length required for the mat, and of two transverse pieces mortised into them at the ends. Four feet will be found a very convenient width for the frame. This framework may rest upon a pair of wooden horses, about two feet in height, in which position the labor can be most easily performed.

A mat of four feet wide should have at least four strings running across it, which will make the spaces between them about 9½ inches in width; closer tying than this even would be desirable. Screws are inserted at the proper distances on the cross-pieces, to which the strings are attached while the mat is being formed. The straw is placed on the strings so as to have all the butts or lower ends come against the side of the frame, with the tops meeting in the

middle, and so thin as to have the mat not more than three-quarters of an inch in thickness when finished. The stitches should not be more than three-fourths of an inch in width. The tying string should be wound on a reel, and there should be one of them for each stationary string. Take a little of the straw with the left hand and work the reel with the right first over the straw and then under the stationary string, bringing it back between the two strings, pulling tightly and pressing the straw, so as to have a flat stitch. In this way the work is continued until the mat is finished.

A CHEAP GREENHOUSE.

The cheapest plan of erecting a greenhouse, says the Germantown Telegraph, is to dig out a pit in a side hill where the upper end will be just above ground and the lower end two or three feet above ground, where the door must be, with two or three steps down for an entrance. Wall up, roof the wall, and cover the whole with sash, as in hot-beds, the sash having more fall, say three feet in a width of ten, the house being fifteen by ten. Erect in this the stand of shelves, and when it is time take up the summer flowers, bulbs, etc., and store them here. The glass should be covered with thick straw mats, which can be removed even when the weather is coldest in clear weather, for an hour or two at mid-day, to get the warmth and influence of the sun. At such times, ventilation also should be attended to by slightly opening a sash or two. No fire is needed. Nearly all readily flowering plants will bloom, and there will scarcely be a week during the winter that a bouquet may not be gathered, if the house is properly managed. The summer is the time to make it and have it ready for fall.

VEGETABLES.

WINTER SUPPLY OF VEGETABLES.

It is very convenient to go out into the garden and gather a good variety of vegetables, so that some new one may appear at nearly every dinner in the week, but this can not be done very much longer, no matter how great the supply. They must be gathered and housed in the best possible manner. They can be buried in pits, but it is with great difficulty that the pits can be opened during the frozen months. An out-of-door cellar is a great convenience upon every farm. It may be built at slight expense in a sandy soil, and in it vegetables may be kept without the unpleasant odors that always accompany them if stored in a cellar beneath the house.

But as we find things upon the majority of farms the roots, etc., must be stored in the cellar beneath the house, and it is of the highest importance that the ventilation should be good. In every house at least one chimney should reach the bottom of the cellar, and every cellar should have windows on two

sides opening into the outer air so as to procure at any time a free circulation across the room.

These points settled, the supply of vegetables should mostly be placed in boxes and barrels, with sand filling the interstices or else with a sod of earth over each package. Moist sphagnum or moss, if placed upon the top of the packages, will keep the vegetables fresh. Cabbages, even, may be packed in this moss and perfectly preserved the whole winter.

All vegetables that grow in the ground (except sweet potatoes) need a cool atmosphere in the cellar—close to freezing point. Sweet potatoes, squashes and pumpkins will keep better on sand in a dry, warm chamber.

Celery may be buried in sand standing the same as it does growing. By a judicious selection and requisite care, a family may enjoy the rich things of the garden the year round, and with a generous supply of vegetables there will not be the racking of brains over "What shall we have for dinner?" that is so common among farm housewives.

The writer of this has during the past season raised potatoes, beets, carrots, cabbages, salsify, tomatoes, parsnips, peas, beans, melons, squashes, pumpkins, celery, turnips, sweet corn and peppers in long rows so that it was very little more work than to care for the same area all in potatoes, and any farmer can do the same thing, furnishing his table with every delicacy of the garden at very little expense, and by exercising common care in preserving the fruits of the garden can make his wife constantly laugh over the generous assortment from which to choose a dinner. Pork and potatoes may remain as a basis, but it is well to build broader than this foundation. Do not wait too long before making these suggested preparations for winter's comfort.

S. Q. LENT.

KEEPING CELERY OVER WINTER.

I have just noticed in the Michigan Pomological Report for 1877 an article on "winter keeping of celery" (copied from the *New York Tribune*), in which the writer says in substance "that one of the very best methods for small lots for family use is to bury a flour barrel in the ground, mixing in the bottom about nine inches of thin mud, placing the celery upright with the balls of roots in the mud, and covering the tops over with mounds of straw, leaves or manure; or the barrel may be placed in a cool cellar, bedding the roots in thin mud, as in the other case, and it will keep a long time. In quantity, it may be stored in trenches about two feet wide and of sufficient depth to take all in except the leaves when standing upright. The plants must be packed closely together, allowing a ball of earth to remain on the roots of each; bank up slightly on either side; cover about two feet deep with dry leaves and place over this a roof-like structure of boards to ward off the rain."

The method adopted last fall by the present writer is less expensive, more convenient to get the celery for use in the winter, and the results were all that could be desired. It is only the extension of an idea obtained from John Hutchings, of Detroit, an amateur grower of fine celery. He puts enough in his cellar to last until Christmas, while I put enough in to last until May. The celery grew some distance from the house, and when taken from the trench was packed upright in a wagon-box and drawn to the kitchen

cellar and packed in the same position in an open box about two feet wide, two feet deep and twelve feet long, which was placed on the cellar bottom close to the wall.

The packing began at one end of the box, care being taken to straighten up all the stems. The plants were crowded together by pressing on the ball of the roots, so that when the box was full it was nearly a solid mass of stems. This box not being large enough to hold all the plants, it was extended by nailing one row of boards to the end of the outer side of the box and securing the other end of the boards with a stake, the cellar wall forming the other side. This space was filled as the box had been, except that the roots stood on the cellar bottom. No mud was used; I think none is needed unless the celery is grown in soil so pliable that none of it will adhere to the roots when taken up. In taking out the plants to use we began where we left off packing, and that used in April was as fresh and crisp as in November. The warmth of the cellar kept the plants in a semi-growing state, hence there was no unhealthy exhalation more than there would be from plants in the sitting-room, and it is so much more convenient to get celery from the cellar than from a trench exposed to frost and storm. I shall never store it in a trench again.

E. BRADFELD.

Ada, Nov. 14, 1879.

LITTLE THINGS IN THE GARDEN.

In the family garden the fault of forgetting to provide a supply of vegetables, is not apt to prevail, but rather some minor products are often wanted just when they cannot conveniently be obtained. Much of the value of a garden consists in the many little things which it affords; things which in themselves can hardly be considered food, but which render other food more palatable, or add to the attractiveness of the table. Few who are fond of pickles and relishes, will fail to provide for cucumbers, lettuce, peppers, martynias, nasturtiums, and similar vegetables. The ones more generally neglected are parsley, marjoram, summer savory, thyme, sage, mints, fennel, dill, coriander, caraway, etc. All these are of the easiest culture, and may be grown from seeds, most of them giving returns the same season where ordinary garden culture is given. Celery is another product which is seldom found in the farmer's garden. I think that few would like to go without it after having enjoyed it for a single season, especially as its culture is not difficult. The most difficult part is its preservation during winter. It may be kept nicely for a few weeks in the cellar. The seeds may be sown, and the plants transplanted at about the same time as cabbages, in rows four feet apart, and six inches apart in the row. The soil must be well enriched in the drill, and the plants not allowed to want for water at any time during growth.

W. H. WHITE.

LIMA BEANS WITHOUT POLES.

The Lima bean is less grown than it should be on account of its supposed uncertainty, tenderness, and the trouble connected with poling. Some ex-

periments of ours with this most delicious of all beans may be of public interest. We find by trial that poling is not only unnecessary but decidedly a disadvantage. When the tendrils begin to start we nip them off. Two or three times after this we go over the vines clipping off the climbing tendrils. The plants become low and bushy and loaded with early maturing pods.

In connection we will state that we have Lima beans varied in color, habit of growth, and time of maturity, by crossing with Early Mohawk and Horticultural Pole. We selected last spring from varied colors enough beans of uniform light-pink color to plant an isolated row. We do not find the color uniform in the product, yet a majority of the pods follow the seed planted in size and color. By repeated selection we do not doubt the variety will become established. In this way we can beyond doubt modify any of our fruits or vegetables not quite meeting our climatic conditions.

Iowa Agricultural College.

PROF. J. L. BUDD.

HIGH PRAISE FOR THE USEFUL TOMATO.

This is one of the most healthful as well as the most universally liked of all vegetables, says Hall's Journal of Health. Its healthful qualities do not depend on the mode of preparation for the table; it may be eaten thrice a day, cold or hot, cooked or raw, alone or with salt and pepper or vinegar, or all together, to a like advantage and to the utmost that can be taken with an appetite. Its healthful qualities arise from its slight acidity, this making it as valuable as berries, cherries, currants and similar articles. It is also highly nutritious. Its chief virtue, however, consists in its tendency to keep the bowels free, owing to the seeds which it contains, they acting as mechanical irritants to the inner coating of the bowels, causing them to throw out a larger amount of fluid matter than they would otherwise have done, with the effect of keeping the mucous surface lubricated and securing a greater solubility of the intestinal contents; precisely on the principle that figs and white mustard seed are so frequently efficient in removing constipation in certain forms of disease.

PARSLEY FOR WINTER USE.

A great boon to the good housekeeper is a little bit of fresh parsley in the winter time; for if trust is placed on the store or the market she is often doomed to disappointment. In view of this many sow a box in the spring, which if fair luck be had in raising plants will give something to crop from all the winter, if the box is placed in a temperature but little above the freezing point. If this has been neglected, spring-sown plants may at this time be taken up out of the garden and set in pots or boxes for the purpose. They require to be well-watered after being replanted, and kept in partial shade for about a week afterwards, before they will again be able to bear the full sunlight.

Some housekeepers make quite ornamental objects for windows out of parsley. The plants may be grown in shells or baskets, or anything that will hold earth. Some get small kegs and make holes with an auger, and

through these set the roots into the earth in the keg, and the herbage grows outside over the external surface of the keg. There are articles of this character made of pottery or chinaware, used by many for growing crocuses, which are just the thing for these parsley purposes. Sometimes these can be had to represent animals, and we do not know but the green herbage of the parsley over them makes quite as good an effect as when the ragged crocus leaves hang over them.

But in the window management of parsley there are two things to be borne in mind—it needs all the light it can get; and it must not have great heat. If the temperature is much over 55 degrees, it will grow very weak, and especially if the light be limited. When the plants are grown in the round kegs the faces of the vessel every day or two should be turned, so that all parts successively shall have a share of the light. Many are anxious to have “something green” in their rooms during the winter, but fear frost. Here is something which is useful and pretty, and which the frost won't hurt much, if it does break in on some unguarded night.—*Germanatown Telegraph*.

MISCELLANEOUS.

PREMIUMS ON WINES.

At a meeting of the Executive Committee of the Michigan State Pomological Society in November, the division of wines was stricken out of the premium list for the annual fair by a unanimous vote. Some friend has sent us a copy of the Pentwater News in which is a record of the proceedings of the Oceana and Lake Shore Pomological Society. We glean from this report that the society passed a resolution with no dissenting vote indicating as the policy of the society that premiums be offered on domestic wines. Last week at the regular monthly meeting of the Grand River Valley Horticultural Society the following was presented by Mr. Merriman:

Resolved, That it is the policy of this association to offer and award premiums on domestic wines and cider at our annual fairs.

The resolution provoked an earnest discussion entered into by a number of gentlemen. The vote taken at the close was very decidedly in the negative—there being but one affirmative vote.

This matter has been under discussion a great many times and we rejoice in the action of the societies that strike the wine division from their lists, and our principal reason is not given from a moral standpoint, either. The fact is, there is no necessity for stimulating people to make better wines or cider for the legitimate uses of the family, for they are made good enough already, and the money can be more profitably employed in securing improvements in articles of greater importance to the producer and consumer. It is a matter of great importance to secure a grape having the quality of the Delaware and the hardiness of the Concord, but there is enough good wine in the country of excellent quality to answer every desirable purpose.

S. Q. LENT.

WHAT J. M. STERLING KNOWS ABOUT FAIRS.

J. M. Sterling, the veteran business manager of the Michigan State Fair, recently expressed himself upon the effects of fairs about as follows:

I believe in fairs; they are good things for the people, and I can appreciate all that is said about the educational benefits to be derived at the annual exhibition of products; but, after all, the main thing, I believe, is to so arrange everything about a fair that everybody that attends will have a good time. It does the people good to have a holiday, and we should in all our methods as far as possible seek to make it jolly for them. Let us have plenty of cheap restaurants, swings, and candy and fruits to eat. Some men talk about having speeches and discussions at fairs. All very nice in theory, but in practice I want none of it. Agricultural addresses at such times are wasted efforts. The people do not want to think and study out nice theories and systems of agriculture. If you are going to have a speech, let some man give it who will be in himself a novelty to the people, and whom it will be a recreation to hear. If you are going to have an agricultural address, let it be printed and distributed to be read at home, where the people can take it in and not feel all the time that they are getting it, that they are losing that horse trot or that visit with a friend. Above everything else let the people who mass at the fairs have a good time and take home what information they can from observation, to be discussed at the proper time at the family circle or the gathering of neighbors. It is suggested that evening discussions would be a fine thing. I doubt it. The people had better go to bed and rest for another day of sight-seeing. Let the man be a ruminant for a week of the fair, gathering in the food to be masticated at a more convenient season.

THE FAIRS—WHAT GOOD ARE THEY?

We have just completed our State fair. In fruit hall we had 3,200 plates, and 800 or more were never unpacked for want of space. There were 1,502 entries, and in grapes and plums the exhibit was better than usual. The committee on all the sections of apples was headed by H. T. Brooks, of Wyoming county, N. Y., who kindly consented to assist us. His work was well done, and we feel under a debt of gratitude to him. The great fault with people who exhibit apples at fairs is that they choose their specimens too thoughtlessly. Out of 20 plates of Baldwins that I saw on exhibition to-day, there was but one that indicated that the owner had tried to get an *even* lot. There were many large specimens, and highly colored ones, but an even plate plate of ordinary size of good form was rare to see. I am very much dissatisfied with our fairs. They do not educate enough, and are practically purposeless. I would have them either market days or sources of progressive information. With us they are little more than "gala days." One thing our society has succeeded in doing at our exhibitions; that is the securing of collections of apples very free from attacks of the codling moth. There has been a most marked change in this within two years, and Professor Beal deserves large credit for persisting in his efforts to educate our people in this matter. One thing more—our collections of fruit are very correctly named. This year several collections of apples were absolutely correct in nomencla-

ture. We offer premiums looking toward progress in this direction, and they act well as a stimulus to good work.—*C. W. Garfield, in Country Gentleman.*

REMARKS.—Secretary Garfield is dissatisfied with the fairs. They amuse more than they instruct. He must recollect that the millennium has not yet arrived. The true idea of a fair is in the nature of an exposition, at least of four weeks' duration, something like the centennial, where fruits or anything else can be brought in as they ripen or in their season, and where every exhibitor gets notice and recognition. Such a fair is a true one and gives time for study, comparison, instruction, and friendly interchange of opinions. Our common fairs are faulty,—they are put up one day and torn down like a circus the next day. They are a mass of confusion, without order or recompense, and bring men in competition and strife where there should be only good feeling and a desire to learn and improve as well as to impart knowledge.

We have been much amused by a comparison between two State fairs, no names mentioned, made by one who attended them for the American Agriculturist. One of them was evidently the New York State fair, managed by farmers, where the services of the best judges are obtained and paid for, and where everything is managed free of every gambling clap-trap and humbug feature. There are no agricultural horse-trots—no fat hogs or fat women—no monstrosities or six-legged sheep or double-headed calves—no bicycle tournament, but a genuine State fair. It was located in a rich farming and dairy district, and railroads at half fare invited the people to turn out. But they didn't turn out worth a cent. Not more than 10,000 people came out in one day. The society barely paid its expenses.

The other State fair was run by a trotting park association. It was a great show and a great success. Horse racing every day, mountebank shows of every kind, side shows, penny traps of all kinds were allowed all the time and every day. The attendance was immense—30,000 on the principal day, 20,000 the previous day, 10,000 the day after. They came because they wanted some fun. More than half were farmers and farmers' wives and sons and daughters; but very few studied the implementrs or the cattle, though they saw the big Ingin and the fat woman, and they watched the horse trots and bicycle races and had a good time. The Jersey cows which cost \$1,000 to \$1,500 were passed by as inferior to their own at home, but the rope dancer drew immensely, so did the balloonist. The one state fair was run to benefit and instruct the farmer, and the other was run to make money out of the farmer—and they thronged its gates and crowded its grounds and declared when they got home that it was a great success. Not one in ten visited pomological hall. As Secretary Garfield says, such fairs do not educate. Yes, but they amuse, and the people want amusement, and they must be got out to the fairs in some way. Michigan wants a four weeks' exposition without any humbug, and we believe that it can be made to draw as well as to pay. What say you?—*Post and Tribune.*

LOCALITY REPORTS.

J. P. Thompson, agricultural editor of the Detroit Post and Tribune, during the summer of 1879, sent out a circular of enquiry to various fruit growers throughout Michigan, and has kindly given his summary of the replies together with the text of a large number of them which we are pleased to insert at the close of this portfolio:

MR. THOMPSON'S QUESTIONS.

1. *The Strawberry*—Has strawberry culture increased in your vicinity, and is it profitable? What is its extent, your market and your experience with new varieties? Do you think it best for strawberry growers to stick to the Wilson?

2. What do you regard as the most profitable fruit grown in your section? Why?

3. *The Apple*—What are the best six winter apples for your neighborhood? What is the most profitable winter apple? How does the Baldwin succeed? The Rhode Island Greening? The Northern Spy? The Red Canada? How do you store for winter? Do you cultivate your orchard?

4. Is fruit culture on the gain in your section? Does it add to the value of home and farm property for selling purposes?

5. *The Peach and the Grape*—What do you regard as the best varieties of these fruits for Michigan? Is their cultivation profitable?

6. What are the prospects of the fruit crop of 1879 in your section?

SUMMARY OF REPLIES.

1. We have the general declaration that fruit culture adds to the charms of the home and household, to the value of farm property, and that especially for selling purposes it has no rival. Farms, plantations, village and city lots, are pointed out where this increased value has been 50 per cent.

2. We desire to call attention to the fact that notwithstanding the widespread destruction of the two severe winters of '73-74, that fruit-growing and fruit production has so far recovered that the year 1879 will be long known as an abundant fruit-producing year, excepting in apples; and that no weather or winter can extinguish the inherent fruit-producing tendencies of the State. The lesson seems to be that it is only necessary to plant another tree where one is lost. Recuperation follows disaster with a rapidity that is absolutely astonishing, and that has again covered the State with orchards and vineyards.

3. The testimony relating to the growth of the peach is certainly very gratifying. Notwithstanding the great peach orchards of the St. Joseph region are sufferers by the yellows, we yet find the peach produced in nearly all the counties, and always with much profit. Thus in the north part of Berrien county we have a peach orchard reported, the net profits of which in 1878 were \$6,400, and in the interior and older counties we hear of the broad planting of the peach tree. The culture of the early varieties is a marked feature, thereby extending the peach season nearly a month.

It appears that the peach is to remain with us, that it has come to stay, that if it fails in one locality its culture springs afresh in another. In the interior

the highest elevations are most sought after, affording the greatest immunity from frosts as well as the best atmospheric drainage.

4. The testimony in regard to strawberry culture is all one way, and shows beyond question that we have added to the fruit catalogues one more great cause of pleasure, profit and health. The growth of this fruit in the public estimation is rapid, and its amateur cultivation in both city and country is a feature of the times. The Wilson is the great market berry, yet we notice on the part of all a desire to gain a variety that has all the good qualities of the Wilson and all the good qualities which the Wilson does not possess. The American strawberry genius is not and cannot be repressed, and it is certainly safe to expect the coming of a more perfect berry. All the cities and villages have their local growers, and the year 1879 may be put down as the most successful strawberry year of the century. Two new varieties have appeared upon the markets, the Marvin and the Shirts, both Michigan plants of acknowledged merits.

5. It would refresh the soul of Horace Greeley to hear the testimony in regard to the grape. It is of universal growth, in the interior of finer flavor even than on the lake shore or islands, common and cheap, giving health and delight to all classes and professions. The Concord is without a dissenting voice the grape for the use of the farm and city millions, while we find the finer sorts competing with it. It is gratifying to see such grapes as the Iona and the Salem in nearly every list, and the Martha mentioned quite often. Michigan must soon be known as the Vineyard State.

6. There are a number of specialties brought out in these letters which we do not recollect ever seeing mentioned before. Thus the Snyder blackberry is approved as profitable by that pioneer and veteran fruit-grower, Jeremiah Black of Battle Creek. Mr. Tate says that the blackberry is the most profitable fruit in his section along the lake shore south of St. Joseph, where the peach is killed out. In Oceana county we find the plum the most profitable fruit, as well as in Mason county. Mr. Hathaway brings to the front the Hubbardston Nonesuch as an apple of great value for evaporating purposes—a very important consideration. Mr. Reynolds mentions the Golden Russet as an apple well adapted to foreign markets—another point of great value when it is considered that this fruit can be grown in almost every township in the state.

7. No testimony could be more conclusive in regard to the value of the apple—it is the universal best paying crop—covering the year, approaching the cereals in its marketable character. Like our wheat and meats it will soon go abroad, or just as soon as it is grown for the foreign market. The general appreciation for the Baldwin will be a surprise to many. It is the leading fruit, standing distinct above all others, seeking high elevations for its greatest perfection. Here is a useful hint to all concerned. There never was a more conclusive and emphatic expression. Then comes the Red Canada, it is in every list, so is the Northern Spy. The Golden Russet, the Rhode Island Greening, the Wagener, the Jonathan, the Peck's Pleasant and the Tallman Sweet about fill the list, some selecting one of these and then another to make out the six best sorts, thus establishing the fact beyond controversy that the profit of apple culture in Michigan is in these great winter varieties that appear to flourish so well in this peninsula, a latitude in which it will be found there is the highest attainment in all the arts of civilization. There also is the most complete vindication of the practice of the cultivation of orchards. There is not a dissenting voice. It is as necessary, says one,

as for corn. The orchard no longer is the child of neglect, abuse and hard usage. The time to cultivate is also set forth. The manner of picking and packing and storing seems well agreed upon.

SOME OF THE RESPONSES.

Berrien County.—The peach is the most profitable fruit for this locality; because you can get the most money for the least labor. The Greening, Roxbury Russet, King of Tompkins County, Baldwin, Wagener, and Northern Spy, are the six best apples, and the most profitable at present is the Baldwin, which succeeds well; the Greening splendidly, the Northern Spy well, except it does not bear very young. I store apples for winter in a fruit house, it being a cellar under a carriage house, situated on a hill side, so that the entrance to the fruit house is on a level with the outside. It is lined inside four inches from the wall and packed with sawdust, also filled in between the joists overhead; the temperature is easily kept at very near freezing point by means of ventilators; the apples are placed in barrels and keep almost perfectly; the last shipment was made this season July 8, and sold at \$3.25 per bushel. My orchards are cultivated, having no other crop except fruit the third year; some hood crop usually bears up to the third year.

Fruit culture is decidedly on the gain in this section both in quantity and quality. No improvements put upon the land add so much to value of farm property for selling purposes as well cultivated orchards.

The most profitable varieties of peach have been Early and Late Crawford, Smock, Stump the World, Old Mixon and Hale's Early. Grapes, Concord and Delaware. The cultivation of the peach and grape have been very profitable with me, the peach netting one season, above all expenses of picking and shipping, a little over \$400 per acre for a whole orchard of 16 acres. Grapes have done nearly as well. I have only a small vineyard and it has received the best of attention.

In regard to price obtained for my apples sold July 8th, they being Roxbury Russets and Greenings, I write it plain and then italicise, the *bushels*, so that there should be no mistake. I put them up in baskets and covered the same as we ship peaches, but the fruit was very fine. I have a few Russets now, they are as perfect as when put in the cellar a year ago.

H. C. SHERWOOD.

Kalamazoo County.—In reply to your inquiries relative to fruit-growing in this locality I answer briefly: Strawberry culture has increased somewhat and is considered rather profitable; home market principally. Several new varieties are being tried with varying success. I think it best to continue to cultivate the Wilson to some extent, but think for a part of the crop several of the newer sorts should find a place, especially for use at the home table.

I regard the apple as the most profitable fruit grown in Michigan? Why? Because more people use and buy it, and it has a wider market than all other fruits grown in Michigan.

The best six winter apples are: Red Canada, Baldwin, Jonathan, Golden Russet, Wagener and Talman Sweet. Regard Red Canada as the most profitable winter apple. The Baldwin succeeds well on high ground, with good air drainage; Rhode Island Greening does not bear well; Northern Spy is a long time coming into bearing, and then too much imperfect fruit. Red Canada succeeds well; tree hardy, good grower, good bearer of superior fruit; a good handler and keeper, and brings more money in market than any other apple.

Store for winter, carefully hand pick and sort, pack in barrels and remain in cool place till danger of frost, then store in cool cellar of even temperature. Would cultivate an orchard. Fruit culture is rather on the gain. It adds to the value of home greatly; and for selling, much.

The best and most profitable varieties of grapes for cultivation in this locality are the Hartford Prolific, Concord, Delaware, Iona, Salem, and Kalamazoo. Peaches—Early and Late Crawford, Barnard, Snow's Orange, Hill's Chili, and Jacques Rareripe. Good to eat and profitable to sell. All fruits of good quality are abundant except apples, which are perhaps half a crop. In establishing an orchard, I would top-graft Red Canada, Baldwin, Jonathan, and Wagener on well grown, two-year-old Northern Spy stock. Think it will increase the vigor of growth in Red Canada, Jonathan, and Wagener, and render the Baldwin more hardy.

EMMONS BUELL.

Van Buren County.—Mr. A. C. Glidden, of Paw Paw, says: Strawberry culture has increased and for that reason is not profitable. Our market is limited to Paw Paw and its vicinity, and the consumption is not equal to the supply. Yes, people will buy the Wilson as soon as anything, and wouldn't pay any more for a strawberry as large as a tomato and as sweet as a Crawford. Peaches are the most profitable, because the location is favorable and competition limited. The best varieties of apples are the Baldwin, Northern Spy, Golden Russet, Canada Red, and half a dozen other varieties equal to the Greening. The Baldwin is the most profitable and succeeds well; Greening, poor bearer; Northern Spy gaining in favor; Red Canada losing prestige; we store in cellars, packed in barrels. Orchards not generally cultivated. Fruit culture is at a standstill, except for peaches.

Peaches for succession and profit: Alexander, Early Rivers, Hale's Early, Mountain Rose, Crawford, Snow's Orange, Jacques, Mixon and Stump, Late Crawford, Hill's Chili, Smock Free. Grapes—Concord and Delaware. Their proper cultivation is exceedingly profitable. Apples are slim. Grapes and peaches good.

Mr. A. G. Gulley, of South Haven, also says: Strawberry culture is increasing here each year. Cannot give the average, but about 250 bushels per day were shipped from this port this year. Chicago was our market. Unless a grower has a home market, and can select his customers, the Wilson is by far the best.

The peach is our most profitable fruit, because it does well here. We have a good market, and it cannot be grown everywhere. For apples, the best six are Baldwin, R. I. Greening, Northern Spy, Red Canada, Wagener, Golden Russet; Baldwin the most profitable. All varieties would do well. Apples here all sold in the fall. Our orchards are cultivated. In this section the following peaches are the best: Alexander, Amsden's, Early Louise, Hales' Early, Early Crawford, Richmond, Foster, Late Crawford, Jaques Rareripe, Old Mixon Free, Hill's Chili, and Smock Free. The Concord and Delaware grapes are very profitable. Apples are light but fine. All other fruits very good.

Cass County.—Mr. B. Hathaway of Little Prairie Ronde, originator of the Michigan strawberry, furnishes a letter of great value, from which we make free extracts: The cultivation of the strawberry has increased in this part of the State, especially on the line of the various railroads. I think it evident

that the past crop has been altogether beyond the needs of the market,—of any market that can be reached with so transient a fruit as the strawberry.

One grower on the line of the Michigan Central railroad told me that a large portion of his crop, several acres, did not net more than about two cents a quart after paying freights and commissions. Fortunately for myself, I had only a small plantation—a half-acre or so—and being off the lines of railroad I was enabled to realize a fair price for what I had to sell, getting from five to six cents a quart, or about four cents on the vines.

These prices would make the strawberry a paying crop if there were any certainty of their being maintained.

We have a number of varieties that can be depended upon, with good culture, for 160 bushels to the acre, or a bushel to every square rod of ground; this, at three cents a quart *on the vines*, would amply pay, if the market were only certain.

That we have varieties that will wholly displace the Wilson, as yet seems doubtful. That we have those that can successfully compete with it, especially in prolonging the season, is evident.

Which are the successful competitors among the newer sorts it will take several years yet to determine, even if in the meantime others more valuable than any we have do not come to the front, which to me seems highly probable.

Apples have heretofore been the best paying fruit that is grown to any extent here, and must, I think, continue to pay where any fruit crop pays. “Why?” This crop approaches more nearly to the cereals in its marketable character than the other fruits. The winter sorts, at least, can be held for months and shipped to distant parts of the country, while the more tender fruits must be sold at once and in a near market.

The Baldwin is manifestly the most popular sort among growers, and just at this time is probably the most popular in the market and the choice of dealers.

The tree of this variety is a little tender here; otherwise it could be planted with a greater certainty of profit than any other sort that has been as well tested.

The Rhode Island Greening, while still popular in the market, is not productive, in this part of the state at least, and must be discarded.

The Northern Spy has been for me the most profitable kind grown. It has borne more fruit over a series of years than the Baldwin, and holding my crop until spring as I usually have done, it has paid me well.

“The Red Canada” is the apple of the future in the minds of some fruit-growers. While not as productive as the Baldwin or Spy, its keeping qualities make it more desirable to handle than those sorts; and though the tree is rather slender when grown in the usual way, when worked on a more vigorous variety, as the Spy, it has given the best of satisfaction.

The Baldwin, the Northern Spy and the Red Canada are three of the six most profitable winter apples for us, no doubt. The other three it is more difficult to name. It is probable that a vote of the leading growers of the State would name the Wagener as the fourth on the list.

From my own experience I do not hesitate to name the Hubbardston None-such as the fourth, if, indeed, it should not be placed more nearly the first. It is more reliable here than any other sort, and has a larger proportion of marketable fruit than the Baldwin even. While of the best quality for a mid-winter apple, it does not hold, grown here, until spring, as well as is desirable.

But with the introduction of the patent evaporator this sort is bound to come to the front, not only for its quality, certainty of production and large size, but no less for its universal fairness and fine shape for working up with the least waste.

I will name the Wagener as the fifth on the list, though not without some reservations.

From its early fruitfulness and great productiveness it has been among the paying sorts. It does not, however, keep quite as well as it should for an apple to hold through winter, and the tree from its early and continued bearing never attains a large size, and the indications are that it will fail sooner than other popular sorts.

The sixth sort I will not pretend to name.

While a good orchard of 100 trees, together with a general assortment of other fruits, as pears, cherries, grapes, etc., will very materially enhance the salable value of the farm, a very large orchard of apples does not now add a proportionate appreciation.

There is a very general feeling prevalent that the fruit business, as a certainly profitable investment, is not so safe as it was thought to be some years ago; in fact, that it is already overdone.

As for grapes, we can grow them in greater perfection, no doubt, in the interior of the state than they can be grown in the peach belt, or on the borders of Lake Erie and the islands, our greater summer heat being favorable to the better ripening of this fruit. We need, however, especially with the finer sorts, to resort to protection in winter, which must of necessity limit the production. Even with this drawback there is so much invested in grape growing that it is far from being more than moderately remunerative.

As to the best varieties, the Concord is more generally grown than any other, and is more productive and certain than any other sort except the Delaware. With me the latter is not only as productive—producing as many pounds to the vine—as the Concord, but is more certain. This is not, however, the most common experience. My land is too strong for Concord, but seems to just suit the Delaware and the Iona. This latter does generally well with me, but has to have protection in winter.

Ionia County.—Mr. C. E. Rust, of Ionia, reports: Strawberry culture is on the increase in Ionia county, and has been for the past ten years profitable. There were about 750 bushels raised about this place this season, and about the same amount consumed in the place. I raised 370 bushels on my grounds, and have 17 varieties, and the Wilson, all things considered, is the best thing with me. The grape crop has been the most profitable here for the past few years. Why? Because there is the most money made from the least amount of labor, and the Concord has never failed here. The best six varieties of winter apples are the Northern Spy, Baldwin, Rhode Island Greening, Wagener, Golden Russet, and Grimes's Golden Pippin. Canada Red withers badly and is a shy bearer. Baldwin, Northern Spy and Rhode Island Greening succeed well here except during those two cold winters. The Baldwin and Greening winter-killed some. The Fameuse (Snow) does remarkably well here for early winter. Fruit culture is on the gain in this section and adds materially to the value of home and farm property for selling purposes. The best variety of grape is the Concord, without a doubt, for Michigan, and its cultivation is profitable. The best varieties of peach for Michigan are the Crawfords, Hill's Chili, Early York, Richmond, Early

Beatrice and most of the hardy early varieties. Don't want anything later than late Crawford for this climate. Peach cultivation is profitable in certain localities. The prospect of the fruit crop this season here is good. Grapes and peaches never better.

Shiawassee County.—Mr. J. B. Barnes, of Owosso, writes: The strawberry culture has more than trebled within the last five years in his vicinity. The crop is mostly grown in the towns upon the railroad. Within an area of 10 miles we have several fields, from one to fifteen acres, under cultivation. At 8 cents per quart, everybody eats strawberries, and the consumption is immense. Most of the strawberries grown in this vicinity are consumed at home. If we have a surplus the Saginaws are always ready to receive all that we send. Sometimes 100 crates go down on the morning train. I have cultivated most of the new varieties, but have never found a berry that has as many good qualities as the Wilson. Give the Wilson the same treatment that you give the dear-bought and far-fetched varieties and it will match them any time. For private use there are other varieties that I would prefer to the Wilson; for instance, the Cumberland Triumph. This is a new variety and for table use is unsurpassed, is quite as prolific and much larger than the Wilson, but it lacks the firmness of the Wilson. Persons who grow strawberries to ship I would advise to stick to the Wilson. One year with another I consider strawberry culture the most profitable. Why? Because we have a ready market. It is the first fruit offered in market, and any man, woman, or child, that has a dime is bound to have a dish of strawberries and cream, not only one day, but as long as the crop lasts.

Fruit culture is on the gain, and adds vastly to the value of farm property for selling purposes. The Owosso grape stands head and shoulders above any other variety that I have upon my ground. Then follows the Delaware, Concord, Martha (white), Iona. If a man has these five varieties he is all right. Apples are one-third of a crop. The strawberry was so abundant that all the growers lost money. Peaches, pears and grapes are a medium crop.

STATEMENT OF FINANCES.

The financial statement of 1879, as made at the annual meeting, could not include the settlement with ex-Treasurer Adams (which has been consummated since that date), so that it was purposely left out of the minutes of that meeting, as recorded in an earlier part of this volume.

Now that the finance committee have every item on the accounts of the society correct, a complete statement can be made.

TREASURER PEARSALL'S ANNUAL REPORT.

My report is in two divisions, which are distinct from each other, and neither contains any items of the other. This plan is taken for the purpose of making every item clear to the members of the society.

LIFE-MEMBERSHIP ACCOUNT.

The following amounts include all the money that has come into my hands credited to the life-membership fund :

The Seymour mortgage.....	\$1,000 00
Two Government bonds—\$50 each.....	100 00
Cash.....	30 00

Total life fund in my hands.....	\$1,130 00
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GENERAL ACCOUNT.

RECEIPTS.

Balance from last year.....	\$249 54
Appropriation from State Agricultural Society.....	1,400 00
Annual membership.....	177 00
Interest on Government bonds.....	3 00
Exchange of certificates.....	1 50
Donated premium.....	1 40
	\$1,832 44
Total receipts.....	\$1,832 44

DISBURSEMENTS.

Checks paid during year ending Dec. 1, 1879.....	\$1,555 37
Balance in treasury.....	\$277 04

S. M. PEARSALL,
Treasurer.

REPORT OF FINANCE COMMITTEE.

At the annual meeting there were some matters pending which, as the Secretary's report of that meeting indicates, had been placed by the executive committee in our hands for settlement.

A complete settlement has been consummated, and the following statement, as an addendum to Treasurer Pearsall's report, will give the society a complete account of our finances as they now stand:

GENERAL ACCOUNT.

In the hands of Treasurer.....	\$277 04
Cash received from ex-Treasurer Adams.....	21 63
Securities received from ex-Treasurer Adams.....	180 00
Total funds credited to society's general account.....	<u>\$478 67</u>

LIFE-MEMBERSHIP ACCOUNT.

In the hands of Treasurer.....	\$1,130 00
Securities from ex-Treasurer Adams.....	320 00
Total life-membership fund.....	<u>\$1,450 00</u>

It will be seen, from a comparison of the total amount of life-membership fund with the number of life members reported by the Secretary at ten dollars each, that the fund is fifty dollars short. This is due to the fact that early in the history of the society the arrangement had not been entered into by which the life-membership receipts should become a permanent fund. Thus there are five of the earlier memberships, the fund from which was used up. At any time when the society see fit this amount can be appropriated from the general fund to the permanent fund of the society, and make the total amount of our permanent fund correspond with the number of life members.

Respectfully submitted,

N. CHILSON,
E. F. GUILD,
Finance Committee.

LIST OF ANNUAL MEMBERS DURING 1879.

NAME	P. O. ADDRESS.	COUNTY.	CERTIFICATE EXPIRES.
Adair, William	Detroit	Wayne	Sept. 13, 1880.
Allen, J. W.	Grand Rapids	Kent	March 5, 1880.
Andrus, Wm. B.	Allegan	Allegan	Dec. 4, 1880.
Armstrong, Wm. L.	Sand Beach	Huron	Dec. 23, 1880.
Ashley, J.	Fennville	Allegan	Aug. 22, 1880.
Bagley, Wm. D.	Old Mission	Grand Traverse	Feb. 18, 1880.
Beard, George	Detroit	Wayne	Sept. 15, 1880.
Beecher, N. A.	Flushing	Genesee	Jan. 30, 1880.
Benham, F. M.	Olivet	Eaton	Sept. 16, 1880.
Bennett, Wm.	Coldwater	Branch	June 16, 1880.
Bilz, Aloys	Spring Lake	Ottawa	Dec. 3, 1880.
Birdsall, Wm.	Grand Rapids	Kent	Feb. 25, 1880.
Bixby, T. A.	South Haven	Van Buren	Sept. 20, 1880.
Bishop, B.	Hillsdale	Hillsdale	Feb. 20, 1880.
Bitely, N. H.	Lawton	Van Buren	Dec. 30, 1880.
Blanchard, C. C.	Grand Ledge	Eaton	Oct. 23, 1880.
Blodgett, D. A.	Hersey	Mecosta	May 19, 1880.
Blowers, J. M.	Lawrence	Van Buren	Sept. 19, 1880.
Briggs, Dan. B.	Romeo	Macomb	Aug. 16, 1880.
Brown, W. A.	Stevensville	Berrien	Dec. 4, 1880.
Buck, H. G.	Allegan	Allegan	Dec. 4, 1880.
Buell, B. G.	Little Prairie Ronde	Cass	Dec. 11, 1880.
Bullock, Alexander	Clayton	Lenawee	Sept. 16, 1880.
Burrington, J. Q. A.	Tuscola	Tuscola	Sept. 12, 1880.
Buzzell, Martin	Romeo	Macomb	Aug. 16, 1880.
Carpenter, C. K.	Orion	Oakland	Sept. 19, 1880.
Chaffer, O. N.	Detroit	Wayne	July 14, 1880.
Childs, J. W.	Ypsilanti	Washtenaw	Sept. 19, 1880.
Church, J.			June 20, 1880.
Cobb, G. N.	Muskegon	Muskegon	Sept. 20, 1880.
Collar, Peter	Adrian	Lenawee	Dec. 1, 1880.
Cooper, Robert	Trenton	Wayne	April 9, 1880.
Coryell, Charles R.	Jonesville	Hillsdale	Dec. 1, 1880.
Crawford, W. S.	Detroit	Wayne	Sept. 19, 1880.
Crittenden, L. E.	Benton Harbor	Berrien	Aug. 23, 1880.
Culver, Charles	Muskegon	Muskegon	June 20, 1880.
Cummings, Nelson	Englishville	Kent	May 28, 1880.
Cutler, F. B.	St. Johns	Clinton	Jan. 20, 1880.
Cutting, H. D.	Clinton	Lenawee	Sept. 18, 1880.
Doney, H. W.	Jackson	Jackson	June 21, 1880.
Dorr, S. W.	Manchester	Washtenaw	Feb. 19, 1880.
Dumont, J. B.	Allegan	Allegan	Dec. 3, 1880.
Dutton, C. A.	Holland	Ottawa	June 18, 1880.
Edmonston, E. D.	Adrian	Lenawee	June 5, 1880.
Ellis, L. S.	Manistee	Manistee	Sept. 16, 1880.
Emmons, W. K.	Grand Rapids	Kent	Dec. 3, 1880.
Engle, H. C.	Detroit	Wayne	Sept. 15, 1880.
Engleman, M.	Manistee	Manistee	Sept. 16, 1880.
Evart, Peter	Black Lake	Muskegon	Oct. 16, 1880.
Fletcher, Sarah	Ann Arbor	Washtenaw	Sept. 16, 1880.
Foley, Daniel	Emmet	St. Clair	Sept. 16, 1880.
Garfield, Chas. W.	Grand Rapids	Kent	Sept. 16, 1880.

LIST OF ANNUAL MEMBERS—CONTINUED.

NAME.	P. O. ADDRESS.	COUNTY.	CERTIFICATE EXPIRES.
Giddings, Geo. W.	Romeo	Macomb	Aug. 16, 1880.
Giddings, Moses A.	Romeo	Macomb	Aug. 15, 1880.
Giddings, Solomon O.	Romeo	Macomb	Aug. 16, 1880.
Glidden, A. C.	Paw Paw	Van Buren	Dec. 3, 1880.
Gray, Thomas	Douglas	Allegan	Dec. 3, 1880.
Gray, Dexter	Hudson	Lenawee	Dec. 2, 1880.
Gulley, A. G.	South Haven	Van Buren	Feb. 15, 1880.
Gulley, F. A.	Lansing	Ingham	June 18, 1880.
Hall, Dr. E.	Royalton	Berrien	Aug. 23, 1880.
Hall, Hobart H.	Grand Rapids	Kent	Feb. 27, 1880.
Harrison, Wm. H.	Kalamazoo	Kalamazoo	Feb. 19, 1880.
Hartwicke, L. M.	Smith's Corners	Oceana	Sept. 10, 1880.
Hawley, Richard	Detroit	Wayne	March 4, 1880.
Hess, H. W.	Unionville	Tuscola	Sept. 18, 1880.
Higgins, F. W.	Detroit	Wayne	June 3, 1880.
Hitchcock, H.	Union	Cass	Sept. 4, 1880.
Holstead, L. L.	Lawton	Van Buren	Dec. 30, 1880.
Hollister, Ashley	East Golden	Oceana	Dec. 1, 1880.
Hubbell, J. J.	Benzonia	Benzie	Jan. 29, 1880.
Hudson, W.	Allegan	Allegan	Dec. 4, 1880.
Hunt, L. G.	Lansing	Ingham	Feb. 20, 1880.
Hyler, Wm.	Casnovia	Kent	Aug. 27, 1880.
Ingraham, James	St. Joseph	Berrien	Aug. 23, 1880.
Ingham, J. C.	Benton Harbor	Berrien	Dec. 4, 1880.
Irwin, John	Buchanan	Berrien	Dec. 1, 1880.
Johnson, P. W.	Grand Rapids	Kent	Dec. 3, 1880.
Jones, Chas. E.	Amber	Mason	March 17, 1880.
Keeney, J. R.	Tipton	Lenawee	Sept. 16, 1880.
Kies, Geo. D.	Clinton	Lenawee	Nov. 3, 1880.
Koon, Charles	Lisbon	Kent	Aug. 28, 1880.
Lannin, Joseph	South Haven	Van Buren	Sept. 20, 1880.
Laubach, Benjamin	Berlin	Ottawa	May 28, 1880.
Lawton, Geo. W.	Lawton	Van Buren	Feb. 18, 1880.
Lawton, C. D.	Lawton	Van Buren	Dec. 30, 1880.
LeValley, E.	Ionia	Ionia	Feb. 18, 1880.
LeValley, Ira F.	Ionia	Ionia	Sept. 25, 1880.
Lewis, N. W.	Ganges	Allegan	Dec. 4, 1880.
Loud, Geo. B.	Romeo	Macomb	Aug. 16, 1880.
Lyman, W.	Minneapolis	Minnesota	May 5, 1880.
Mallett, E. M.	Ionia	Ionia	Oct. 10, 1880.
Marvin, Harry	Ovid	Clinton	June 19, 1880.
Mattock, D. J.	Toledo	Ohio	Sept. 15, 1880.
Mason, Thomas	Chicago	Illinois	April 14, 1880.
McCrea, J. F.	Detroit	Wayne	Feb. 10, 1880.
McDiarmid, J. D.	Pleasanton	Manistee	April 12, 1880.
McNaughton, R. T.	Jackson	Jackson	Dec. 3, 1880.
McMillan, James C.	Dalton	Muskegon	June 18, 1880.
Merriman, C. N.	Grand Rapids	Kent	Dec. 3, 1880.
Miller, Martin L.	Tuscola	Tuscola	Sept. 12, 1880.
Miller, W. H.	Berrien Springs	Berrien	Sept. 16, 1880.
Moorman, H. C.	Detroit	Wayne	Sept. 1, 1880.
Moore, Franklin	St. Clair	St. Clair	Sept. 17, 1880.
Moore, J. H.	Forestville	Sanilac	Sept. 18, 1880.
Morley, John	Flint	Genesee	Dec. 17, 1880.
Moulton, Bridgman	Muskegon	Muskegon	Jan. 17, 1880.
Muzzey, Joel P.	Romeo	Macomb	Aug. 16, 1880.
Nash, J.	Sparta Center	Kent	Aug. 27, 1880.
Neff, Nathan	Trenton	Wayne	April 9, 1880.
Newbery, Wm.	North Newburgh	Shiawassee	Feb. 19, 1880.
Nims, Jerome W.	Romeo	Macomb	Aug. 16, 1880.
Olds, A. A.	Decatur	Van Buren	Sept. 16, 1880.
Oliver, Andrew	Allegan	Allegan	Dec. 4, 1880.

LIST OF ANNUAL MEMBERS—CONTINUED.

NAME.	P. O. ADDRESS.	COUNTY.	CERTIFICATE EXPIRES.
Owen, J. S.	Douglas.	Allegan.	Dec. 2, 1880.
Palmer, T. W.	Detroit.	Wayne.	Dec. 2, 1880.
Parmelee, Amos	Romeo.	Macomb.	Aug. 16, 1880.
Partridge, Azariah.	Flushing.	Genesee.	Nov. 17, 1880.
Peck, S. B.	Muskegon.	Muskegon.	Jan. 9, 1880.
Perry, Wm. N.	Wyandotte.	Wayne.	Sept. 17, 1880.
Pillsbury, O. P.	Muskegon.	Muskegon.	Jan. 9, 1880.
Pillsbury, J. M.	Muskegon.	Muskegon.	Oct. 2, 1880.
Potter, L. B.	Lansing.	Ingham.	Feb. 19, 1880.
Potter, E. M.	Kalamazoo.	Kalamazoo.	Dec. 2, 1880.
Priest, Frank.	Decatur.	Van Buren.	Nov. 24, 1880.
Probert, Wm.	Pleasanton.	Manistee.	May 30, 1880.
Pugh, Henry P.	Clinton.	Lenawee.	Nov. 3, 1880.
Randall, J. M.	Adrian.	Lenawee.	Feb. 19, 1880.
Randall, C. J.	Blissfield.	Lenawee.	Sept. 16, 1880.
Ratcliff, J. C.	Richmond.	Indiana.	Dec. 3, 1880.
Ray, H. J.	Watervliet.	Berrien.	Dec. 3, 1880.
Reid, E. C.	Allegan.	Allegan.	Dec. 2, 1880.
Reade, Samuel A.	Romeo.	Macomb.	Aug. 16, 1880.
Rice, Truman.	Lawton.	Van Buren.	Dec. 4, 1880.
Robinson, E. C.	Portland.	Maine.	Dec. 1, 1880.
Robinson, C. W.	Detroit.	Wayne.	Sept. 16, 1880.
Rockwood, C. H.	Flint.	Genesee.	Nov. 17, 1880.
Rogers, D. H.	Parma.	Jackson.	Sept. 17, 1880.
Rogers, G. W.	Englishville.	Kent.	May 28, 1880.
Romer, J. F.	Bay City.	Bay.	Feb. 19, 1880.
Rowe, Wm.	Grand Rapids.	Kent.	Dec. 3, 1880.
Rowe, W. Asa.	Mason.	Ingham.	Feb. 19, 1880.
Rowley, D. H.	Romeo.	Macomb.	Aug. 16, 1880.
Ruddiman, John.	Muskegon.	Muskegon.	Feb. 19, 1880.
Sailor, John.	Allegan.	Allegan.	Dec. 3, 1880.
Satterlee, James.	Greenville.	Montcalm.	June 5, 1880.
Saunders, Joseph.	Detroit.	Wayne.	Feb. 19, 1880.
Schreiber, F. G.	Monroe.	Monroe.	Sept. 15, 1880.
Schuyler, W. H.	Ann Arbor.	Washtenaw.	Dec. 3, 1880.
Selover, I. M.	Coldwater.	Branch.	Feb. 19, 1880.
Sherwood, H. C.	Watervliet.	Berrien.	Feb. 18, 1881.
Sneathen, P. D.	Lowell.	Kent.	Feb. 19, 1880.
Snow, James.	Muskegon.	Muskegon.	June 20, 1880.
Smith, Henry T.	Kalamazoo.	Kalamazoo.	April 28, 1880.
Smith, Henry O.	Romeo.	Macomb.	Aug. 16, 1880.
Stanchfield, O. O.	Ludington.	Mason.	March 17, 1880.
Steele, B. W.	Adrian.	Lenawee.	Aug. 29, 1880.
Stiles, A. L.	Jackson.	Jackson.	Feb. 20, 1880.
Strong, Aaron.	Wyandotte.	Wayne.	Sept. 19, 1880.
Sutton, T. J.	Tecumseh.	Lenawee.	Sept. 16, 1880.
Swartz, Edward.	Lisbon.	Kent.	Feb. 27, 1880.
Taylor, J. F.	Douglas.	Allegan.	Dec. 4, 1880.
Tyler, H. S.	Dalton.	Muskegon.	June 17, 1880.
Turner Brunson.	Flushing.	Genesee.	Nov. 17, 1880.
Vezkerke, J. A.	Grand Rapids.	Kent.	March 15, 1880.
Walker, S. S.	St. Johns.	Clinton.	Jan. 20, 1880.
Ward, L. M.	Benton Harbor.	Berrien.	April 10, 1880.
Warner, W. W.	Allegan.	Allegan.	Nov. 25, 1880.
Wight, Rev. J. A.	Bay City.	Bay.	Feb. 19, 1880.
Wilde, Charles W.	Berlin.	Ottawa.	Sept. 16, 1880.
Williams, M. B.	Kalamazoo.	Kalamazoo.	Dec. 4, 1880.
Wilson, M.	Jackson.	Jackson.	June 20, 1880.
Wood, W. F.	Muskegon.	Muskegon.	Jan. 9, 1880.
Woodman, Edson.	Paw Paw.	Van Buren.	Sept. 4, 1880.
Wycoff, H. A.	White Lake.	Oakland.	June 10, 1880.
Zeek, J.	New Era.	Oceana.	Sept. 19, 1880.

LIFE MEMBERS OF THE STATE POMOLOGICAL SOCIETY.*

Adams, H. Dale, Galesburg, Kalamazoo county.
Adams, Mrs. H. Dale, Galesburg, Kalamazoo county.
Archer, Thomas, St. Joseph, Berrien county.
Armitage, James, Monroe, Monroe county.
Arnold, W. D., Ionia, Ionia county.
Avery, C. P., Old Mission, Grand Traverse county.
Ball, John, Grand Rapids, Kent county.
Baldwin, H. P., Detroit, Wayne county.
Baldwin, J. D., Ann Arbor, Washtenaw county.
Baxter, W. J., Jonesville, Hillsdale county.
Bradfield, Edward, Ada, Kent county.
Bagley, John J., Detroit, Wayne county.
Beal, W. J., Lansing, Ingham county.
Bates, T. T., Traverse City, Grand Traverse county.
Bruchner, George W., Monroe, Monroe county.
Bragg, L. G., Kalamazoo, Kalamazoo county.
Burham, W. P., Ionia, Ionia county.
Burrows, George L., Saginaw City, Saginaw county.
Bullock, B. D., Jackson, Jackson county.
Bidwell, H. E., Plymouth, Wayne county.
Bailey, L. H., South Haven, Van Buren county.
Bryant, C. T., South Haven, Van Buren county.
Castello, George, Saginaw City, Saginaw county.
Chandler, Z., (deceased), Detroit, Wayne county.
Cook, A. J., Lansing, Ingham county.
Curtis, H. W., Old Mission, Grand Traverse county.
Chapman, H. B., Reading, Hillsdale county.
Chapman, Alvin, Bangor, Van Buren county.
Chapman, Austin B., Rockford, Monroe county.
Chilson, Nathaniel, Battle Creek, Calhoun county.
Chilson, Miss Ida, Battle Creek, Calhoun county.
Crosby, M. S., Grand Rapids, Kent county.
Cooper, George S., Ionia, Ionia county.
Cooley, Elisha, (deceased), Jackson, Jackson county.
Clark, M. W., Jackson, Jackson county.
Dickinson, G. W., Grand Rapids, Kent county.
Dietrich, C. J., Grand Rapids, Kent county.
Dyckman, A. S., South Haven, Van Buren county.
Dykman, J., East Saginaw, Saginaw county.
De Lisle, Wm. H., Bay City, Bay county.
Dixon, A. S., East Saginaw, Saginaw county.
Boyle, Thomas, Monroe, Monroe county.
Dean, A. J., Adrian, Lenawee county.
Davis, P. C., Kalamazoo, Kalamazoo county.
Dieckman, Mrs. Josephine M., East Saginaw, Saginaw county.

*NOTE. A Life Membership is \$10. The fund thus gathered is invested in good securities and only the interest employed for general expenses.

Fields, Miss Jennie E., East Saginaw, Saginaw county.
 Fuller, S. L., Grand Rapids, Kent county.
 Ferry, T. W., Grand Haven, Ottawa county.
 Foster, W. D. (deceased), Grand Rapids, Kent county.
 Fowler, S. W., Manistee, Manistee county.
 Griggs, George W., Grand Rapids, Kent county.
 Gilbert, John, (deceased), Ovid, Clinton county.
 Geddes, David, Saginaw, Saginaw county.
 Greening, J. C., Monroe, Monroe county.
 Guild, E. F., East Saginaw, Saginaw county.
 Humphrey, J. W., South Haven, Van Buren county.
 Hannah, Perry, Traverse City, Grand Traverse county.
 Haviland, J. B., Traverse City, Grand Traverse county.
 Husted, James D., Lowell, Kent county.
 Husted, Noah P., Lowell, Kent county.
 Hall, Frederick, Ionia, Ionia county.
 Hathaway, B., Little Prairie Ronde, Cass county.
 Hanford, H. P., Bristol, Indiana.
 Hayden, Mrs. H. A., Jackson, Jackson county.
 Ilgenfritz, I. E., Monroe, Monroe county.
 Ilgenfritz, C. A., Monroe, Monroe county.
 Ives, Caleb, Monroe, Monroe county.
 Jerome, Mrs. David H., Saginaw City, Saginaw county.
 Johnson, William, Vassar, Tuscola county.
 Knapp, S. O., Jackson, Jackson county.
 Knapp, E. U., Grand Rapids, Kent county.
 Kedzie, R. C., Lansing, Ingham county.
 Kelsey, E. P., Ionia, Ionia county.
 Kidd, J. H., Ionia, Ionia county.
 Littlejohn, F. J., Allegan, Allegan county.
 Linderman, A. T., Whitehall, Muskegon county.
 Linderman, Harvey, South Haven, Van Buren county.
 Lincoln, L. C., Greenville, Montcalm county.
 Lincoln, Mrs. L. C., Greenville, Montcalm county.
 Lyon, T. T., South Haven, Van Buren county.
 Loomis, P. B., Jackson, Jackson county.
 Mitchell, W. H. C., Traverse City, Grand Traverse county.
 Marshall, Wm. A., Old Mission, Grand Traverse county.
 Montague, A. K., Traverse City, Grand Traverse county.
 Mason, L. M., East Saginaw, Saginaw county.
 Mason, Mrs. Sarah A., East Saginaw, Saginaw county.
 McCallam, E. H., Old Mission, Grand Traverse county.
 Monroe, Judge, (deceased), Lawrence, Van Buren county.
 McClatchie, G. C., Ludington, Mason county.
 Mann, S. B., Adrian, Lenawee county.
 Noble, W. A., Monroe, Monroe county.
 Odell, Samuel W., Muskegon, Muskegon county.
 Partridge, B. F., Bay City, Bay county.
 Pearsall, S. M., Grand Rapids, Kent county.
 Petty, Thomas, Spring Lake, Ottawa county.
 Parmelee, George, Old Mission, Grand Traverse county.
 Parmelee, Mrs. George, Old Mission, Grand Traverse county.
 Parke, Mrs. Amos S., East Saginaw, Saginaw county.
 Reynolds, E. H., Monroe, Monroe county.
 Reynolds, H. G., Old Mission, Grand Traverse county.
 Ransom, W. B., St. Joseph, Berrien county.
 Rose, D. Forsyth, East Saginaw, Saginaw county.
 Renwick, T. R., Grand Rapids, Kent county.
 Rich, Hampton, Ionia, Ionia county.
 Rust, C. E., Ionia, Ionia county.
 Ramsdell, J. G., Traverse City, Grand Traverse county.
 Ramsdell, Mrs. J. G., Traverse City, Grand Traverse county.
 Rowe, William N., Grand Rapids, Kent county.
 Root, Amos, Jackson, Jackson county.
 Rose, Mrs. Sophie E., East Saginaw, Saginaw county.
 Slayton, Asa W., Grattan, Kent county.

Scott, J. Austin, Ann Arbor, Washtenaw county.
Staunton, G. W., Grand Rapids, Kent county.
Savidge, Hunter, Spring Lake, Ottawa county.
Sleeper, F. S., Galesburg, Kalamazoo county.
Soule, J. B., Fruitport, Muskegon county.
Sterling, F. S., Monroe, Monroe county.
Sterling, J. M., Monroe, Monroe county.
Sterling, J. C., Monroe, Monroe county.
Sterling, W. C., Monroe, Monroe county.
Sterling, W. P., Monroe, Monroe county.
Sterling, Mrs. Emma M., Monroe, Monroe county.
Shirts, E. J., Shelby, Oceana county.
Suttle, John, (deceased), Grand Rapids, Kent county.
Smith, E. T., Ionia, Ionia county.
Smith, N. E., Ionia, Ionia county.
Steere, B. W., Adrian, Lenawee county.
Stearns, J. N., Kalamazoo, Kalamazoo county.
Sessions, Alonzo, Ionia, Ionia county.
Sessions, William, Ionia, Ionia county.
Sigler, Artemus, Adrian, Lenawee county.
Sinclair, W. G., Spring Lake, Ottawa County.
Smith, H. H., Jackson, Jackson county.
Tracy, Will W., Detroit, Wayne county.
Thompson, W. D., Jackson, Jackson county.
Thompson, J. P., Detroit, Wayne county.
Taylor, George, Kalamazoo, Kalamazoo county.
Taylor, ———, Kalamazoo, Kalamazoo county.
Towles, George W., Benton Harbor, Berrien county.
Vick, James, Rochester, New York.
Wells, H. G., Kalamazoo, Kalamazoo county.
Williams, S. P., Monroe, Monroe county.
Wier, Antoine, Monroe, Monroe county.
Webber, George W., Ionia, Ionia county.
Webber, Miss Francis E., East Saginaw, Saginaw county.
Wooding, Charles F., Lowell, Kent county.
Winchester, A. O., St. Joseph, Berrien county.
Wurtz, Elias H., East Saginaw, Saginaw county.
Whittlesey, John, St. Joseph, Berrien county.
Zeigler, J. C., Saginaw City, Saginaw county.

FRUIT CATALOGUE FOR 1879.

PREFATORY NOTE.

The Michigan State Pomological Society in issuing the second edition of its fruit catalogue has nothing to regret in the attempt it has made to disseminate accurate information regarding the fruits that have been tested in our State. From every quarter have come testimonials in its behalf, and although the gathering of the information has been almost entirely the work of the chairman of the Committee on Catalogue; still there is a hopeful sign in the promises of those who have given information the past season, that now they know what is wanted, they will be better prepared to "lend a hand" next year.

Some criticisms of the plan of the catalogue have been offered by men whose opinions we are glad to receive; still after mature deliberation on the part of the Executive Committee, no important changes in the scope of the catalogue have been thought desirable.

There can be no mistaking the intent of grading the long list of fruits, if he who seeks information, carefully observes the plan of the catalogue and the clearly defined purpose as therein expressed. We can not prepare for the erroneous conclusions that will be drawn by those who open a page of the catalogue and utterly disregard the previous explanations, any more than we can suit our method of speech to all the people who may hear only a single remark in conversation and receive a false impression. All that the society asks of Michigan fruit-growers in handing them this catalogue is, to so far appreciate the work of its President who has the catalogue in charge as to promptly render him all the assistance possible in the annual revision.

The requests and acknowledgments of the committee can not be better expressed than in the following communication which was received in connection with the copy for the revised edition:

SOUTH HAVEN, Michigan, December 24th, 1879.

Sec. Chas. W. Garfield:

DEAR SIR: In submitting the accompanying revision of the society's catalogue for republication, with its transactions for the year 1879, I, as chairman of the committee charged with this duty, desire to call attention to the fact of its proposed

annual revision and republication; and to request any and all persons, into whose hands it shall fall, to communicate to the chairman, at any time during the ensuing year, any facts within their knowledge calculated to aid in the work of a subsequent revision.

In the accompanying revision valuable aid, other than that from members of the committee, has been received from Israel Pennington, of Lenawee county; Chas. R. Coryell, Hillsdale; J. A. Donaldson, Berrien; Wm. Rowe and Edward Bradfield, Kent; N. Chilson, Calhoun; Chas. Hurd, Manistee; Jno. J. Hubbell, Benzie; Prof. W. J. Beal, Ingham; Hon. J. G. Ramsdell, Grand Traverse, and others.

The annual revision is required to be complete in time to be submitted at the annual meeting of the society, occurring on the first Tuesday in December; hence it will be important that all matter bearing upon the subject, reach the chairman at least two weeks prior to that date; and that all members of the standing committee on catalogue have this in mind; and forward their reports to the general chairman on or before that time.

The following are members of the standing committee on catalogue:

B. W. Steere, Adrian, Lenawee county, first district.

I. E. Ilgenfritz, Monroe, Monroe county, second district.

H. Dale Adams, Galesburgh, Kalamazoo county, third district.

W. A. Brown, Stevensville, Berrien county, fourth district.

George Parmelee, Old Mission, Grand Traverse county, fifth district.

T. T. Lyon, South Haven, Van Buren county, general chairman.

Each member of the committee is expected to appoint three or more members as a sub-committee for his district, he being chairman of such committee.

T. T. LYON,

Chairman of Committee on Catalogue.

The wish of the Society is not to avoid criticism, but rather to invite it for perfecting the work that is begun. We want the friends of Michigan horticulture to aid us by advice and kindly assistance, that we in turn may aid the planters who look to our association for counsel. By thus aggregating the experience of the best observers, we hope to secure the people who come to abide with us, in developing the fruit interests of our State, from many of the errors which others have made from a want of information.

SECRETARY.

CATALOGUE OF 1879.

ABBREVIATIONS, APPLICABLE THROUGHOUT THE CATALOGUE.

Size.	Quality.	Adhesion.	Season.	Origin.
l. large.	b. best.	c. cling.	The usual abbreviations for months.	The usual abbreviations for countries.
m. medium.	g. good.	f. free.	b. beginning.	h. hybrid.
s. small.	v. very.		e. end.	? doubtful.
v. very.			m. middle.	

The season of maturity given is, as nearly as practicable, that of the second and third tiers of counties, reckoning from the south line of the State.

The nomenclature adopted is that of "Downing's Fruits and Fruit Trees of America"—latest edition.

PLAN OF THE CATALOGUE.

The varieties are numbered at the extreme left, and also at the left of the page occupied by the column of remarks, to avoid confusion in tracing the connection. Synonyms are introduced in a few cases only, and *italicised*. In the column devoted to descriptions, the distinguishing peculiarities of the fruit, with its season and origin, are more or less fully given by the use of abbreviations. Those applicable to the entire catalogue appearing at its commencement; and those applying locally, at the heads of the sections to which they appertain. In each of the columns headed use and value, the figures 1 to 10 express the gradations of value, for the purpose to which the column is devoted; the first two columns having reference strictly to the quality of the fruit separately considered, and the third to all the qualities, whether of tree or fruit, that affect the question of profitableness. Under the head of locality, a sub-column is assigned to each of the five districts into which the lower peninsula of the State is divided, such division being as follows, viz.: 1st district, the eastern tier of counties, from the southern boundary of the State northward as far as its capacity for fruit culture is known. 2d district, the mass of interior counties, omitting the tier along the southern boundary, and those adjoining Lake Michigan. 3d district, the south tier of counties, omitting Monroe on the east and Berrien on the west. 4th district, the lake shore counties from the south line of Berrien northward to and including Ottawa county. 5th district, the counties adjacent to Lake Michigan and its bays from the south line of Muskegon county as far northward as their capacity for fruit culture is known. In these columns a * indicates that the variety which it represents is known to succeed in the district; ** that it is especially valuable, and a † that it is on trial and found promising. Many kinds of very little value are added, for the purpose of showing by the low values given them, and by remarks in the column for that purpose that, though more or less grown in the State, their farther cultivation is not intended to be encouraged. The leading advantage to the fruit culturists of the State, sought in this catalogue, is to supply all who may wish to plant with a distinct purpose in view, the means of selecting wisely with reference to such purpose, from the varieties which shall have been properly tested in the State and found best adapted to the special purpose they shall have in view.

SECTION I.—APPLES.

ABBREVIATIONS FOR THIS SECTION.

Form.

a. angular.
c. conical.
f. flattened.
l. lopsided or oblique.

a. oblong.
ob. oblate or obtuse.
ov. oval or ovate.
r. roundish.

NUMBER.	NAMES.	DESCRIPTIONS.						USE AND VALUE. Scale 1 to 10.		
		Size.	Form.	Color.	Quality.	Season.	Origin.	Dessert.	Cooking.	Market.
1	Alexander.....	v. l.	r. c.	g. y. r.	g.	Oct. Dec.	Rus.	2	10	6
2	American Beauty.....	l.	r. c.	y. d. r.	v. g.	Dec. Apl.	Mass.	7	5	6
3	American Golden Pippin.....	m. l.	r. ob. c.	y. b.	v. g.	Nov. Feb.	Am.	7	7	8
4	American Golden Russet.....	s.	r. ov.	y. ru.	b.	Oct. Jan.	Am.	9	8	2
5	American Pippin (<i>Grindstone</i>).....	m.	ob.	g. r.	g.	Dec. Dec.	Am.	1	6	4
6	American Summer Pearmain.....	m.	o.	y. r.	b.	Sept.	Am.	10	5	5
7	Anglo American.....	m.	ob.	y. r.	v. g.	Aug. Sept.	Can.	5	5	3
8	Aunt Hannah.....	m.	r. ob.	y. ru.	g.	Dec. Feb.	Mass.	7	6	6
9	Autumnal Swaar.....	l.	r. c.	o. y. ru.	v. g.	Sept.	Am.	7	7	5
10	Autumnal Sweet Swaar.....	m.	c. ob.	y. r.	v. g.	Oct.	Am.	5	5	2
11	Autumn Sweet Bough.....	m.	c. a.	y.	v. g.	Aug. Oct.	Am.	5	5	2
12	Bailey Sweet.....	l.	r. c.	y. d. r.	v. g.	Nov. Mar.	N. Y. ?	6	7	4
13	Baldwin.....	l.	r. c.	y. c. r. o.	v. g.	Nov. Mar.	Mass.	6	9	10
14	Bars.....	l.	r.	y. r. ru.	v. g.	Sept.	R. I.	7	4	6
15	Beauty of Kent.....	l.	r. f. c.	g. y. p. r.	g.	Oct. Nov.	Eng.	5	8	7
16	Belle et Bonne.....	v. l.	r. ob.	y.	g.	Oct. Mar.	Conn. ?	2	8	8
17	Belmont.....	m.	r. f. c.	y. v.	v. g.	Nov. Mar.	Penn.	9	5	6
18	Ben Davis.....	m. l.	r. c.	y. r.	g.	Dec. May.	Ken. ?	3	5	9
19	Benoni.....	m. s.	r. ob. c.	y. d. c.	v. g.	Aug. Sept.	Mass.	7	6	6
20	Bentley Sweet.....	m.	r. f. l.	y. g. r.	v. g.	Jan. May.	Vir. ?	4	6	3
21	Better than Good.....	m.	ob.	p. y.	g.	Nov. Jan.	Penn. ?	6	5	2
22	Black Gilliflower.....	m.	o. c.	g. d. r.	g.	Nov. Feb.	Am.	4	2	6
23	Blenheim Pippin.....	l.	r. ob. c.	y. o. d. r.	g.	Oct. Dec.	Eng.	5	9	8
24	Blue Pearmain.....	l.	r. c.	d. p. r.	g.	Oct. Feb.	Am. ?	6	5	5
25	Bottle Greening.....	m.	ob. c.	g. y. c.	v. g.	Jan. Feb.	Ver.	8	---	---
26	Broadwell.....	m.	ob. c.	y. b.	v. g.	Nov. Feb.	Ohio.	6	7	2
27	Buckingham.....	m. l.	ob. c.	g. y. c.	v. g.	Nov. Feb.	Vir. ?	6	7	7
28	Buffington's Early.....	m.	ob.	y. w. r.	v. g.	Aug.	Penn.	7	7	3
29	Burr's Winter Sweet.....	m.	ob. c.	y. r.	v. g.	Nov. Mar.	Mass.	6	7	2
30	Cabashea (<i>20-oz. Pippin</i>).....	v. l.	r. ob. c.	y. r.	g.	Dec. Feb.	Am.	1	4	1
31	Canada Reinette.....	l.	ob. c. f.	g. y. b.	v. g.	Dec. Apr.	Eur. ?	8	7	1
32	Carolina Red June.....	s.	ov. c.	d. r.	v. g.	Aug.	N. C. ?	7	6	

SECTION I.—APPLES.

ABBREVIATIONS FOR THIS SECTION.

Color.		
<i>b.</i> brown.	<i>g.</i> green.	<i>ru.</i> russet.
<i>c.</i> carmine.	<i>o.</i> orange.	<i>s.</i> scarlet.
<i>cr.</i> crimson.	<i>p.</i> purplish.	<i>v.</i> vermilion.
<i>d.</i> dark.	<i>r.</i> red.	<i>y.</i> yellow.

NUMBER.	LOCALITY.					REMARKS.
	East.	Center.	South.	Southern Lake Shore.	Northern Lake Shore.	
1	*	*	*	*	*	Tree vigorous, spreading, productive; very beautiful. For cooking, superior.
2	*	*	*	---	---	Vigorous, productive, annual bearing tree. Sometimes small and scabby from overbearing.
3	*	*	*	---	---	An old sort. Superior to many that are better known.
4	*	*	*	---	---	Said to be better farther south. Tree upright. Fruit often scabby and worthless.
5	*	*	*	*	*	Keeps a year. Cooks well, but otherwise scarcely eatable.
6	*	*	*	*	*	Slow grower, hardy. Fruit, when perfect, mild, rich, excellent. Very beautiful.
7	*	---	---	---	---	Tree vigorous, productive. Sweet apples are little wanted at this season.
8	*	---	---	---	---	Tree a slow grower. Fruit not specially attractive.
9	*	---	---	---	---	Hardy, vigorous, spreading. Excellent, but not productive enough for the market.
10	*	---	---	---	---	Tree and fruit desirable, but coming in with the bulk of the fall fruits, lessens its value.
11	*	---	---	---	**	One of the best dessert sweet apples of its season.
12	*	*	*	*	*	For vigor, productiveness, size, beauty, and quality combined this has few if any superiors.
13	**	**	**	**	*	Tree lacks hardness. Fruit drops badly. Bitter rot in large specimens. Very popular.
14	*	---	---	---	---	Good enough in tree and fruit, but has to compete with the mass of fall fruits.
15	*	*	*	*	*	An old culinary fruit,—now nearly superseded.
16	*	---	---	---	---	A vigorous and productive old New England apple. Little known here.
17	*	*	*	*	*	Fruit often defective in this climate. Best for home markets. Suits the popular taste.
18	*	*	*	*	*	Vigorous, hardy, prolific. Fruit beautiful and handles well; but scarcely fit to eat.
19	*	*	*	*	*	Tree upright, vigorous, very productive. Fruit too small on old trees.
20	*	---	---	---	---	Tree grows and bears moderately. Not generally known or highly valued.
21	*	---	---	---	---	Not as good or as valuable here as the name imports.
22	*	*	*	*	*	Very mild flavor. Soon gets dry and mealy. Prized by a very few persons.
23	*	*	*	*	---	In vigor and productiveness; also character of fruit, this is very desirable, for market and cooking.
24	*	*	*	*	*	Beautiful; but lacks both productiveness and quality.
25	*	---	---	†	---	Vigorous, spreading. Little grown in this State.
26	*	*	*	†	*	Vigorous, hardy, spreading, irregular, productive. A desirable sweet apple.
27	*	---	---	---	---	Little grown here. More popular farther south.
28	*	---	---	---	---	A desirable dessert apple. Not as generally known as it deserves to be.
29	*	---	---	---	---	Good grower, early bearer, productive. But little known.
30	*	*	*	*	*	Tree vigorous, tender; thin bearer; drops badly. Poor quality. Subject to bitter rot.
31	*	*	*	*	*	An old and excellent apple; now but little called for.
32	*	*	*	*	---	Often small, scabby, and imperfect; quality excellent. Ripens in succession.

SECTION I.—APPLES—CONTINUED.

NUMBER.	NAMES.	DESCRIPTIONS.						USE AND VALUE. Scale 1 to 10.		
		Size.	Form.	Color.	Quality.	Season.	Origin.	Dessert.	Cooking.	Market.
33	Chenango Strawberry.....	m.l.	o. c.	w. c.	v. g.	Sept. Oct.	N. Y.	8	4	9
34	Chronical	m.	r. c.	g. y. r.	g.	Dec. Dec.	Ind.	2	12	4
35	Clyde Beauty.....	l.	r. c. a.	g. r.	g.	Oct. Jan.	N. Y.	6	7	8
36	Cogswell.....	m.l.	r. ob.	y. r.	b.	Dec. Mar.	Conn.	8	7	8
37	Cole's Quince.....	l.	r. ob.	g. y. r.	v. g.	Oct. Dec.	Maine.	5	8	6
38	Colvert.....	l.	ob. c.	g. y. r.	g.	Oct. Nov.	N. Y. ?	4	7	8
39	Cooper	l.	r. ob.	g. y. r.	g.	Oct. Dec.	Am. ?	4	6	8
40	Cooper's Market.....	m.	ob. c.	y. r. c.	g.	Dec. May.	Am. ?	6	6	6
41	Cornell's Fancy.....	m.	o. c.	y. c.	v. g.	Oct. Nov.	Penn.	7	6	8
42	Craig's August.....	m.	r. c.	y. r.	g.	Aug. Sept.	Am.	6	4	6
43	Cranberry Pippin.....	m.	r. ob.	y. s.	g.	Nov. Mar.	N. Y.	5	7	8
44	Cumberland Spice.....	m.l.	r. c.	y. r.	g.	Dec. Mar.	N. J.	6	5	7
45	Daniel.....	m.	o. c.	g. c.	v. g.	Sept. Oct.	Am.	6	4	2
46	Danver's Winter Sweet.....	m.	r. o.	y. o.	v. g.	Nov. Apr.	Mass.	4	6	3
47	Detroit Black.....	m.l.	r. c. f.	d. c.	g.	Oct. Feb.	Can. ?	6	4	2
48	Detroit Red.....	m.	r. c.	d. c.	g.	Oct. Nov.	Am. ?	4	3	1
49	Devonshire Quarrenden.....	m.s.	r. f. c.	d. c.	g.	Aug. Sept.	Eng.	5	6	2
50	Domine	m.	r. ob.	g. y. r.	v. g.	Dec. Apr.	Am. ?	6	6	7
51	Drap D'Or.....	l.	r. ob.	y.	g.	Aug. Oct.	Eur.	5	5	1
52	Duchess of Oldenburgh.....	m.	r. ob.	y. r.	g.	Sept.	Rus.	5	9	8
53	Dyer (<i>Pomme Royal</i>).....	m.	r.	g. y. r.	b.	Sept. Oct.	Fr. ?	8	8	4
54	Early Harvest.....	m.	r. ob.	y. w.	b.	July, Aug.	N. Y. ?	8	7	5
55	Early Joe.....	s.	ob. c.	y. r.	b.	Aug. Sept.	N. Y.	10	6	4
56	Early Long Stem.....	s.	o. c.	g. y.	g.	Aug.	Am.	6	5	1
57	Early Strawberry.....	s.	r. c.	y. r.	v. g.	July, Aug.	N. Y.	7	5	5
58	English Russet.....	s.m.	r. c.	g. y. rn.	g.	Jan. May.	Am. ?	4	5	6
59	English Sweet.....	m.l.	o. c.	d. r.	v. g.	Oct. Feb.	N. E. ?	4	7	4
60	(<i>Hansdell's Sweet</i>) Esopus Spitzenburgh.....	l.	o. c.	y. r.	b.	Dec. Apr.	N. Y.	8	10	4
61	Evening Party.....	s.m.	ob.	w. g. r.	g.	Dec. Mar.	Penn.	7	4	2
62	Fallowater	v.l.	r. c.	y. g. r.	g.	Nov. Mar.	Penn.	4	4	7
63	Fall Jenetting.....	l.	ob. c.	g. y. r.	g.	Sept. Oct.	Conn. ?	5	4	6
64	Fall Orange.....	l.	r.	y. r.	g.	Oct. Nov.	Mass.	4	8	8
65	Fall Pippin.....	v.l.	r. f.	y. g. b.	b.	Oct. Dec.	Am.	9	10	7
66	Fall Wine.....	m.	r. ob.	r. y.	b.	Sept. Nov.	Am.	7	6	1
67	Fameuse (<i>Snow</i>).....	m.	r. ob.	g. y. r.	v. g.	Oct. Nov.	Can. ?	8	4	6
68	Fort Miami.....	m.	r. o. c.	y. b. rn.	v. g.	Mar. May.	Ohio.	6	6	---

SECTION I.—APPLES—CONTINUED.

NUMBER.	LOCALITY.					REMARKS.
	East.	Center.	South.	Southern Lake Shore.	Northern Lake Shore.	
33	*	*	*	*	*	Tree vigorous, spreading, productive. Fruit of very delicate texture. Popular wherever known.
34	*	*	*	*	---	Negative in quality; will keep two years; moderate annual bearer.
35	*	*	*	*	---	Tree vigorous, upright, very productive. A desirable market apple.
36	*	*	*	*	---	The tree and fruit are both satisfactory, whether for the home or market.
37	*	---	---	---	---	Upright, spreading, productive. A desirable family fruit with a quince aroma.
38	*	*	*	*	*	Tree vigorous, hardy, prolific. Fruit large, showy, but not of high quality. Popular with the masses. Sells well in market.
39	*	*	*	*	*	Tree very vigorous, upright, spreading. Fruit even sized, very attractive.
40	*	*	---	---	*	Hardy, vigorous, upright, productive. Profitable.
41	*	*	*	---	---	Vigorous, productive. A desirable fruit for general purposes.
42	*	---	---	---	---	Strong grower, upright, productive. Of possible value for market.
43	*	---	---	---	*	Tree a good grower, productive. Fruit much like the Maiden's Blush. Even more beautiful. Varies greatly at the north.
44	*	*	---	---	---	Tree a good grower and great bearer. Its color and season are against it for the market.
45	*	---	---	---	---	Very peculiar in growth of tree, as well as color and flavor of fruit. Is better than it looks.
46	*	*	*	*	---	Strong grower and very productive; deserves more attention.
47	*	*	*	---	---	Unproductive, showy. This is probably the Detroit Red of Downing.
48	*	*	*	---	---	There are probably several varieties grown under this name.
49	*	---	---	---	---	Tree spreading, productive. Flavor fine, but fruit often imperfect or scabby; beautiful.
50	*	*	*	*	*	Tree has long, stout, spreading branches, which are very liable to be broken by the heavy crops of fruit. Scabs on old trees.
51	*	*	*	---	*	Tree straggling, moderate grower, unproductive. Very little known.
52	**	**	**	**	*	Hardy, vigorous, very productive. Of little value except for cooking and market.
53	*	*	*	*	---	One of the very finest dessert apples. A poor grower. Unprofitable as a market fruit.
54	*	*	*	*	*	Tardy, irregular bearer. Fruit often imperfect. Valued for its earliness. Fails on old trees.
55	*	*	*	*	*	For the garden. With high culture the fruit is beautiful and excellent.
56	*	---	---	---	---	Little grown. Of little value with so many more attractive fruits in season.
57	*	*	*	*	*	One of the most attractive dessert apples of its season. Ripens in succession.
58	*	*	*	*	*	Strong, upright, very productive, tender. Fruit very even sized, often small. Keeps easily a year.
59	*	*	*	*	*	Very vigorous, and productive. Best sweet apple of its season for cooking and market.
60	*	*	*	*	*	Tree seems to lack vigor. Does not succeed as formerly. Fruit much called for in the market, but rarely offered.
61	*	---	---	---	*	Much like Rambo in tree and fruit. Very little disseminated.
62	*	*	*	*	*	Grows and produces well. Too poor in quality. Size its chief recommendation. Always sells well.
63	*	*	*	*	*	Tree vigorous; spreading, productive. Its season detracts from its value.
64	*	---	*	---	---	The apple grown in this State under this name proves to be the one grown as "Newell," in Hillsdale county.
65	*	*	*	**	*	Tree strong, spreading, productive; liable to scab. Often keeps till spring. In central district lacks productiveness.
66	*	*	*	*	*	Grows and bears well. Fruit often scabby. Not extensively grown.
67	*	*	*	*	**	Fruit scabby and imperfect on old trees. Best on new, rich soils. Good at the north.
68	*	---	*	---	---	So far bears rather sparsely. Tree healthy, thrifty. Requires farther trial.

SECTION I.—APPLES—CONTINUED.

NUMBER.	NAMES.	DESCRIPTIONS.						USE AND VALUE. Scale 1 to 10.		
		Size.	Form.	Color.	Quality.	Season.	Origin.	Desert.	Cooking.	Market.
69	Foundling	m.l.	r. ob. c.	y. g. r.	v. g.	Aug. Sept.	Mass.	7	7	6
70	Fourth of July	m.s.	r. ob. c.	w. y. r.	g.	July.	Ger.	4	6	6
71	Flushing Spitzenburgh	m.	r. c.	g. y. r.	g.	Nov. Mar.	N. Y. ?	6	6	7
72	Gabriel (<i>Ladies' Blush</i>)	m.	r. ob.	w. g. c.	v. g.	Oct. Nov.	Am. ?	8	6	3
73	Garden (<i>Comstock's</i>)	m.	r. ob.	w. r.	g.	Sept. Oct.	N. Y.	3	9	5
74	Garden Royal	m.s.	r. ob. c.	g. y. r.	b.	Aug. Sept.	Mass.	10	5	3
75	Garrettson's Early	m.	r. c.	y.	v. g.	Sept.	N. J.	8	8	8
76	Genesee Chief	l.	r. c.	w. c.	g.	Sept.	Am.	6	8	7
77	Gilpin (<i>Carthouse</i>)	m.	r. o.	r. y.	g.	Dec. May.	Vir.	5	4	5
78	Gloria Mundi	v. l.	r. ob.	g. y.	g.	Oct. Feb.	Eur. ?	1	3	3
79	Golden Russet (N. Y.)	m.s.	r. ob.	y. ru.	v. g.	Dec. May.	Eng. ?	8	5	9
80	Golden Sweet	l.	r.	g. y.	v. g.	Aug. Sept.	Conn.	5	7	4
81	Gravenstein	l.	r. ob. a.	y. r. o.	v. g.	Sept. Oct.	Ger.	6	7	5
82	Green Newtown Pippin	m.	r.	g. br.	b.	Dec. May.	N. Y.	10	8	3
83	Green's Choice	m.	r. c.	y. r.	g.	Aug. Sept.	Penn.	6	5	7
84	Green Sweet	m.	r. ob. c.	g. y.	g.	Dec. Mar.	Mass. ?	6	6	7
85	Grimes' Golden	m.	r. ob. c.	y. o.	v. g.	Dec. Mar.	Va.	7	6	7
86	Hall	s.	ob. c.	y. r.	v. g.	Dec. Apr.	N. C.	8	---	---
87	Hartford Sweet	l.	r. f.	y. g. r.	g.	Dec. June.	Conn.	6	7	4
88	Harvest Redstreak	s.	r. f.	g. y. r.	g.	July.	Penn. ?	2	6	2
89	Haskell Sweet	m.l.	ob.	g. y. r.	v. g.	Sept. Oct.	Mass.	5	7	2
90	Hawley (<i>Douse</i>)	l.	r. ob. c.	y.	v. g.	Sept.	N. Y.	9	2	5
91	Hawthornden	m.l.	r. f.	w. y. r.	g.	Sept.	Scotch.	3	7	6
92	Herefordshire Pearmain	m.	r. c.	y. d. r.	v. g.	Nov. Feb.	Eng.	8	6	1
93	Hightop Sweet	m.s.	r.	y.	v. g.	Aug.	Mass.	5	6	2
94	Hog Island Sweet	m.	ob.	y. r. c.	v. g.	Sept. Oct.	N. Y.	5	7	3
95	Holland Pippin	v. l.	r.	g. y. r.	g.	Aug. Nov.	Eur. ?	6	8	4
96	Hollow Crown	l.	r. c.	y. r.	g.	Nov. Dec.	N. E.	5	7	8
97	Horse	l.	r.	y. r. ru.	g.	Aug. Sept.	N. C. ?	5	6	5
98	Housum's Red	m.	r. o.	y. r.	v. g.	Dec. Feb.	Penn.	6	6	5
99	Hubbardston Nonsuch	l.	r. o. c.	y. r.	b.	Nov. Feb.	Mass.	9	5	9
100	Hunt's Russet	m.s.	r. ob. c.	y. ru. r.	v. g.	Jan. Apr.	Mass. ?	7	7	6
101	Hurlbut	m.	ob. c. a.	y. r.	g.	Oct. Dec.	Conn.	6	7	6
102	Indiana Favorite	m.l.	r. f.	y. r.	g.	Jan. Apr.	Ind.	5	5	7
103	Jabez Sweet	m.	r. c.	y.	g.	Dec. Feb.	Conn.	5	7	3
104	Jefferis	m.	ob. c.	y. c.	v. g.	Sept. Oct.	Penn.	9	6	6

SECTION I.—APPLES—CONTINUED.

NUMBER.	LOCALITY.					REMARKS.
	East.	Center.	South.	Southern Lake Shore.	Northern Lake Shore.	
69	*	---	---	---	---	Moderately vigorous, spreading, productive; desirable in its season.
70	†	---	---	†	---	Strong, upright. May be valuable for its earliness.
71	*	*	*	*	---	Strong, reddish brown shoots. Very productive. Sometimes scabby. Not esteemed valuable.
72	*	---	---	†	---	Small tree; productive. A very beautiful dessert fruit.
73	---	---	*	---	---	A fine culinary apple. Cooks well when half grown.
74	*	*	*	---	---	Moderate grower. Upright roundish. Best dessert apple of its season.
75	*	---	---	---	---	Vigorous, upright, spreading. Very promising.
76	*	*	*	*	---	Strong, vigorous. The showy fruit is the chief attraction.
77	*	*	*	*	---	A good cider apple, and passable for the table.
78	*	*	*	*	*	Vigorous; not productive. Size its only attraction. Worthless everywhere.
79	**	**	*	*	**	Hardy, vigorous. Shoots slender. Very productive. Brings a high price in late spring.
80	*	*	*	*	*	A hardy, spreading, prolific tree. Very popular in its season. Tree tender at the extreme north.
81	*	*	*	*	*	A fine culinary fruit. Tree a fine grower and hardy; lacks productiveness. Bears better at the north.
82	*	*	*	*	*	A weak, slender grower. Fails generally at the west. Unprofitable.
83	*	---	---	---	---	Vigorous, productive. Has good qualities for market.
84	*	*	*	*	---	Tree vigorous, productive. Desirable. More than one variety grown under this name. The genuine is of course intended.
85	*	*	*	*	*	Tree spreading, vigorous, hardy, prolific. Fruit beautiful. Flavor fine, peculiar.
86	*	---	---	---	---	A hardy, upright, slender grower. A beautiful little fruit for the table.
87	*	*	---	---	---	Moderate grower, hardy, productive. A good baking sweet apple.
88	*	*	*	---	*	Tree overbears and fruit becomes small. Tender flesh, acid. Unworthy.
89	*	*	*	*	**	Vigorous, productive. One of the finest of sweet apples.
90	*	*	*	*	*	Annual bearer. Fruit beautiful and good, but soon decays. A dessert fruit. A better keeper north.
91	*	*	*	*	---	Tree vigorous, spreading. Productive alternate years. A beautiful culinary market fruit.
92	*	*	*	*	---	Tree vigorous. Fruit excellent in flavor, but generally imperfect. Very unprofitable.
93	*	---	*	---	---	Tree upright, vigorous. Very productive. Fruit very beautiful and good.
94	*	---	---	---	---	Vigorous, prolific. Desirable, but very little known. Beautiful.
95	*	*	---	---	*	Like Fall Pippin, except in quality and season. Very little known.
96	*	---	---	---	---	Little planted. This season has other and worthier varieties.
97	*	---	---	---	---	Should give place to others of better quality for this climate.
98	*	---	---	---	---	Little known; and may very properly be laid aside.
99	*	*	*	**	**	Should be in every orchard. A very good market variety. Of the highest quality.
100	*	*	*	*	*	Distinct from Golden Russet of N. Y. and the west. Not as valuable.
101	*	---	---	---	---	Very productive. Fruit fair, but not very attractive. Little disseminated.
102	*	---	---	---	---	Both tree and fruit adapted for market. Very little known.
103	*	---	---	---	---	Highly prized in Monroe Co. Not widely disseminated.
104	*	*	*	*	*	A very productive and desirable dessert fruit for early autumn.

SECTION I.—APPLES—CONTINUED.

NUMBER.	NAMES.	DESCRIPTIONS.						USE AND VALUE. Scale 1 to 10.		
		Size.	Form.	Color.	Quality.	Season.	Origin.	Dessert.	Cooking.	Market.
105	Jefferson County.....	m.	r. ob.	y. r.	g.	Oct. Nov.	N. Y.	7	6	6
106	Jersey Sweeting.....	m.	r. ov. c.	g. y. r.	v. g.	Sept.	N. J.	6	7	3
107	Jewett's Best.....	l.	ob. r.	y. g. r.	v. g.	Dec. Feb.	Ver.	8	6	4
108	Jewett's Fine Red.....	m.	r. ob.	g. w. c.	g.	Nov. Feb.	N. H.	7	6	5
109	Jonathan.....	m.s.	r. c.	y. r.	v. g.	Nov. Feb.	N. Y.	8	5	9
110	Kaighn's Spitzenburgh.....	l.	o. ov. c.	w. y. r.	g.	Nov. Jan.	N. J.	5	6	6
111	Keswick Codlin.....	m.l.	ov. c.	g. y. r.	g.	Sept. Oct.	Eng.	2	10	7
112	King of Tompkins Co.....	l.	r. f. c. a.	y. r. c.	v. g.	Dec. Mar.	N. J. ?	7	6	6
113	Klaproth.....	m.	f.	g. y. r.	v. g.	Aug. Oct.	Penn.	7	7	4
114	Lacker.....	m.	ob.	r. c.	g.	Nov. Mar.	Penn.	5	2	5
115	Lady.....	v.s.	f.	y. r.	v. g.	Dec. May.	Fr.	8	1	9
116	Lady's Sweet.....	l.	r. ov. c.	y. r.	v. g.	Dec. May.	N. Y.	5	7	6
117	Large Yellow Bough.....	l.	o. ov.	g. y. r.	v. g.	Aug.	Am.	7	7	6
118	Late Strawberry.....	m.	r. c.	w. r.	v. g.	Oct. Dec.	N. Y.	8	4	5
119	Ledge Sweet.....	m.	ob.	w. y. r.	g.	Dec. Mar.	N. H.	4	4	5
120	Limber Twig.....	m.	r. ob. c.	g. y. c.	g.	Jan. Apr.	N. C. ?	5	7	7
121	London Pippin.....	l.	r. c. f.	y. r.	g.	Nov. Feb.	Eng.	5	7	6
122	Lowell.....	l.	r. ov. c.	g. y.	v. g.	Sept. Oct.	Penn. ?	6	7	8
123	Lyscom.....	l.	r.	g. y. r.	g.	Sept. Nov.	Mass.	7	3	5
124	Macomber.....	m.	ob.	y. r.	g.	Dec. Jan.	Maine.	6	4	5
125	Maiden's Blush.....	m.	r. f. c.	y. r. c.	g.	Sept. Oct.	N. J.	5	7	10
126	Mann.....	m.l.	r. ob.	y. b. r.	v. g.	Jan. Apr.	N. Y.	6	7	8
127	Manomet.....	m.	r. ob.	y. r.	v. g.	Aug. Sept.	Mass.	6	7	4
128	Marston's Red Winter.....	m.	r. c.	w. y. r. c.	v. g.	Dec. Mar.	N. H.	8	7	7
129	May Seeknofurther.....	m.	ob. c. l.	g. y. r.	g.	Feb. June.	Am.	1	1	7
130	McAfee's Nonsuch.....	m.l.	r. ob. c.	y. r.	v. g.	Oct. Feb.	Ken.	6	7	7
131	McLellan.....	m.	r. ob. c.	y. r.	v. g.	Dec. Mar.	Conn.	9	6	7
132	Melon.....	m.l.	r. ob. c.	y. c.	b.	Nov. Mar.	N. Y.	10	8	8
133	Melt in the Mouth.....	m.s.	r. c.	y. r.	v. g.	Sept. Nov.	Penn.	9	5	4
134	Mexico.....	m.	r. ob.	c. r. y.	b.	Sept. Oct.	Conn.	10	6	5
135	Milam.....	m.s.	r.	g. r.	g.	Dec. Mar.	Am.	5	6	5
136	Miller of N. Y.....	l.	r. ob. c.	y. r.	v. g.	Oct. Nov.	N. Y. ?	7	5	8
137	Minister.....	l.	o. c.	g. y. r.	g.	Oct. Feb.	Mass.	6	6	5
138	Monmouth Pippin.....	l.	ob. c. a.	y. r.	v. g.	Nov. Mar.	N. J.	6	7	8
139	Mother.....	m.	r. c.	y. r.	b.	Nov. Feb.	Mass.	8	7	6
140	Munson's Sweet.....	m.	ob.	y. r.	v. g.	Sept. Feb.	Mass. ?	6	7	6

SECTION I.—APPLES—CONTINUED.

NUMBER.	LOCALITY.					REMARKS.
	East.	Center.	South.	Southern Lake Shore.	Northern Lake Shore.	
105	*	---	*	---	*	Vigorous, hardy, prolific. Is but little known.
106	*	*	*	*	*	Prolific. One of the richest early sweet apples. Tree tender in central district.
107	*	---	---	---	---	Tree spreading. Does not keep long enough for profit. Little known.
108	*	---	---	---	---	Moderate grower. Downing says—requires high culture. Little known.
109	**	**	*	*	**	Good bearer, alternate years. Fruit small, very beautiful, and good. Growing in popularity.
110	*	*	*	*	---	Tree vigorous, straggling, productive. Old. Now little grown.
111	*	*	*	*	*	Cooks well, even when but half grown. Very early bearer. Very hardy and prolific.
112	*	*	*	*	*	Too large for market. Not a long keeper. Not good enough for dessert. Improves in quality at the north.
113	*	---	---	---	---	Downing commends it as a promising market apple. This remains to be shown.
114	*	*	*	---	---	An old variety. Not of decided value. Rarely seen in Michigan.
115	*	*	*	---	*	A beautiful little fancy apple. Brings large prices in market in eastern cities. Little known west.
116	*	*	*	*	*	A fair baking apple. Desirable as a long keeper. Retains its juice and flavor.
117	*	*	*	*	*	Tree a little tender, and lacks productiveness. The most popular early sweet apple.
118	*	*	*	*	*	Regular, early bearer. Chenango Strawberry is often grown under this name.
119	*	---	---	---	---	Vigorous, productive, regular bearer. But little known.
120	*	*	*	*	*	Popular west and south as a long keeper. Distinct from Willow Twig.
121	*	---	---	---	---	Little known, with little to specially recommend it.
122	*	*	*	*	**	Strong grower; bears heavily in alternate years. Popular. Profitable.
123	*	---	*	---	---	Generally fair. Tree vigorous, upright, spreading. Not largely planted.
124	*	---	---	---	---	Annual bearer. But little known, and not likely to command special attention.
125	*	**	*	**	**	Spreading, vigorous, prolific. The most popular early autumn market apple.
126	*	*	**	*	*	Hardy, upright, annual bearer. Not much disseminated. Promising.
127	*	---	---	---	---	Vigorous, productive. Fruit excellent. Worthy of increased attention.
128	*	---	---	---	---	Moderate grower. A beautiful and excellent fruit.
129	*	*	*	*	---	Vigorous. Known in Eastern Michigan as Romanite. Unfit to be eaten.
130	†	---	---	---	---	An old variety. Not widely disseminated in Michigan.
131	*	**	---	*	---	Thrifty, upright productive. A very promising variety for home and market. Bears alternate years.
132	*	**	*	*	---	One of the very best dessert apples. Tree hardy, with short wiry shoots. Very productive alternate years.
133	*	---	---	---	---	Moderate vigor. Spreading. Little disseminated. Not likely to become popular.
134	*	*	*	---	---	Moderate grower, hardy, productive. One of the finest of dessert apples.
135	*	*	*	---	*	A hardy and somewhat popular apple farther west. Not common in Michigan.
136	*	---	*	---	---	Vigorous, productive. A promising fruit for market and general purposes.
137	*	*	*	*	---	Moderately vigorous; very productive. Not widely disseminated.
138	*	*	*	*	---	Vigorous, upright, productive. Will prove to be a good market variety.
139	*	*	†	*	---	Productive. An excellent dessert apple. Deserves more attention.
140	*	*	*	---	*	Tree spreading, vigorous, prolific. Fruit very perfect, even sized, and beautiful.

SECTION I.—APPLES—CONTINUED.

NUMBER.	NAMES.	DESCRIPTIONS.						USE AND VALUE. Scale 1 to 10.		
		Size.	Form.	Color.	Quality.	Season.	Origin.	Desert.	Cooking.	Market.
141	Newark Pippin.....	l.	r. o.	g. y. r.	v. g.	Nov. Feb.	N. J. ?	7	7	2
142	Newtown Spitzenburgh.....	m.	ob. c.	y. r.	b.	Oct. Feb.	N. Y.	9	7	5
143	Nickajack.....	l.	r. ob. c.	y. r.	g.	Dec. Apr.	N. C.	5	2	7
144	Northern Spy.....	l.	r. c.	g. y. r.	b.	Dec. Apr.	N. Y.	9	9	10
145	Northern Sweet.....	m.	r. ob.	y. r.	v. g.	Sept. Oct.	Ver.	7	7	2
146	Oakland Co. Seeknofurther.....	m.	r. ob.	y. r.	v. g.	Nov. Mar.	Mich. ?	8	....	8
147	Oconee Greening.....	l.	r. f.	y. b.	g.	Nov. Dec.	Ga.	6	6	7
148	Ohio Nonpareil.....	l.	r. ob.	y. r.	v. g.	Nov. Dec.	Ohio. ?	8	7	9
149	Ortley (<i>White Detroit</i>).....	m.	r. ob. c.	g. y. r.	v. g.	Nov. Feb.	N. J.	7	4	2
150	Paw Paw (<i>Rubicon</i>).....	m.	r. o.	y. r.	v. g.	Dec. June.	Mich.	8	5	5
151	Peach Pond Sweet.....	m.	ob.	y. r.	v. g.	Sept. Nov.	N. Y.	6	6	5
152	Peck's Pleasant.....	m. l.	r. f.	g. y. r.	v. g.	Nov. Mar.	R. I. ?	8	7	7
153	Pennock.....	l.	r. f. l.	r. y.	g.	Nov. Mar.	Penn.	1	1	5
154	Perry Russet.....	m.	r. c. l.	y. ru. b.	g.	Nov. Dec.	N. Y. ?	6	6	5
155	Pittsburgh Pippin.....	l.	ob.	y. r.	v. g.	Nov. Apr.	Penn.	8	8	9
156	Pomme Gris.....	s.	ob. r.	ru. r.	b.	Dec. Mar.	Eur. ?	9	6	5
157	Porter.....	m. l.	o. c.	y. r.	v. g.	Sept.	Mass.	7	6	7
158	Pound Royal (<i>Winter</i>).....	l.	r. o. c.	y. w. r.	g.	Dec. Apr.	Fr. ?	6	5	4
159	Primate.....	m.	r. ob. c.	g. w. c.	v. g.	Aug. Oct.	N. Y. ?	9	3	5
160	Progress.....	m.	r. ob.	y.	g.	Oct. Apr.	Conn.	7	5	6
161	Pumpkin Russet.....	l.	r.	y. g. ru.	g.	Sept. Jan.	N. E. ?	2	6	2
162	Pumpkin Sweet (<i>Pound Sweet</i>).....	v. l.	r.	w. g. y.	g.	Sept. Dec.	Conn. ?	2	8	4
163	Rambo.....	m.	r. ob.	y. w. r.	v. g.	Oct. Feb.	N. J. ?	7	5	4
164	Rawley's Janet.....	m. l.	ob. c.	y. r. c.	g.	Feb. June.	Vir.	3	1	5
165	Rebecca.....	m.	ob.	w. y. c.	g.	Sept.	Del.	6	5	2
166	Red Astrachan.....	m. l.	r. c.	g. y. c.	g.	Aug.	Rus.	4	9	10
167	Red Canada.....	m.	r. ob. c.	y. r.	b.	Dec. June.	N. E. ?	7	8	10
168	Red Russet.....	m. l.	r. c.	y. r. ru.	v. g.	Jan. Apr.	N. H.	8	7	5
169	Ribston Pippin.....	m.	r. c.	y. r. ru.	v. g.	Nov. Apr.	Eng.	6	7	4
170	Rhode Island Greening.....	l.	r. ob.	g. y. r.	v. g.	Nov. Apr.	R. I. ?	8	10	8
171	Richardson.....	l.	r. c.	r.	g.	Aug. Sept.	Mass.	6	6	5
172	River.....	m. l.	ob. c.	y. r.	g.	Aug. Sept.	Mass.	5	8	6
173	Roman Stem.....	m.	r.	y. b. ru.	v. g.	Nov. Mar.	N. J.	7	7	4
174	Rome Beauty.....	l.	r. c.	y. r.	g.	Nov. Feb.	Ohio.	6	7	5
175	Rose Red (<i>Autumn Rose</i>).....	m.	r. ob. c.	y. r.	v. g.	Nov. Jan.	N. Y. ?	6	7	4
176	Roxbury Russet.....	m. l.	r. ob. a.	y. ru. r.	v. g.	Jan. June.	Mass.	6	9	7

SECTION 1.—APPLES—CONTINUED.

NUMBER.	LOCALITY.					REMARKS.
	East.	Center.	South.	Southern Lake Shore.	Northern Lake Shore.	
141	*	---	---	---	---	Tree crooked, irregular, drooping. An amateur variety. Unprofitable.
142	*	*	*	*	---	Requires warm soils. Sometimes scabs or cracks. One of the best apples when perfect.
143	*	*	*	*	---	A southern variety. Hardy, vigorous. Not profitable in this latitude.
144	*	**	**	**	**	Strong, upright, hardy. Tardy bearer. Fruit sometimes uneven and imperfect. Requires good culture.
145	---	---	*	---	---	A poor grower. Much like Munson, which excels it in this respect. Little known.
146	---	*	---	---	---	Popular in Oakland Co. Less disseminated elsewhere.
147	*	---	---	---	---	A vigorous, hardy, southern apple. Does well in eastern Michigan.
148	*	**	**	*	*	Very vigorous, productive. One of the most valuable late autumn apples.
149	*	*	*	*	*	Moderately vigorous, upright, productive. Fruit frequently scabby and worthless.
150	*	*	*	*	---	Hardy, moderate grower, regular bearer. Must have suitable soil and good culture.
151	*	*	*	---	*	Tree vigorous, spreading, productive. A beautiful and desirable sweet apple.
152	*	*	*	*	*	Habit of tree like R. I. Greening, but less vigorous. Generally and deservedly popular.
153	*	*	*	*	*	Sometimes profitable to ship South. No person cares to taste it the second time.
154	*	*	*	*	*	Distinct from Golden Russet. An early, abundant bearer. Not generally popular.
155	*	---	---	*	---	Spreading. Very productive. A very promising variety. But little known.
156	*	*	*	*	*	Moderate, upright grower. Good early bearer. An exceeding fine dessert apple.
157	*	*	*	*	*	Usually very fair. Valuable for market or home use, as well as dessert.
158	*	---	---	---	---	Spreading grower. Must have high culture. Little known.
159	*	**	*	*	*	One of the best dessert apples. Subject to water core and other defects. Ripens in succession.
160	*	---	---	---	---	Moderate grower, early and prolific bearer. Very little disseminated.
161	*	*	*	*	---	Large spreading tree. Only useful for cooking and for feeding. Sweet.
162	*	*	*	*	*	Tree strong, upright, spreading. Fruit often water cored. Culinary.
163	*	*	*	*	---	A vigorous, but tender tree. Overbears and produces small fruit. A very common farmer's apple.
164	*	*	*	*	*	Hardy, vigorous, spreading. Better farther south.
165	*	---	---	---	---	Upright, spreading, productive. A nice dessert apple. Little known here.
166	**	**	**	**	**	Strong grower; early bearer; hardy. Fruit beautiful; showy; profitable; too sour for dessert.
167	**	**	**	*	**	Very popular for market where fully proved. Tree not vigorous. Should be topgrafted in all cases. Best on strong soils.
168	*	---	---	---	---	Tree much like Baldwin. The same true of fruit except the russet.
169	*	*	*	*	*	Tree a good grower, productive. High, sharp flavor. Succeeds at the north.
170	*	*	*	**	**	Tree spreading, vigorous; generally productive; best at Lake Shore. One of the old favorites.
171	*	---	---	---	---	Comes in with the summer and autumn fruits. Little known.
172	*	*	---	---	---	Slow grower; productive. An excellent, high flavored culinary fruit.
173	*	*	*	---	*	Moderately vigorous, spreading. Very productive. Not very much known in this State.
174	*	*	*	*	*	Moderate grower, productive. Inclined to overbear on old trees.
175	*	---	*	---	---	Tree spreading, productive. Desirable when fair. Often scabby and worthless.
176	*	*	*	*	*	Very liable to the attacks of the codling moth. Tree strong, spreading, productive. Tender.

SECTION 1.—APPLES—CONTINUED.

NUMBER.	NAMES.	DESCRIPTIONS.						USE AND VALUE. Scale 1 to 10.		
		Size.	Form.	Color.	Quality.	Season.	Origin.	Dessert.	Cooking.	Market.
177	Scarlet Pearmain	m.	c.	c. y.	v. g.	Aug. Oct.	Eng.	9	8	5
178	Shiawassee Beauty	m.	ob.	w. r.	v. g.	Oct. Jan.	Mich.	10	6	8
179	Sine Qua Non	m.	r. c.	g. y.	v. g.	Aug.	N. Y.	8	5	4
180	Slingerland Pippin	m.l.	r. l.	y. r.	g.	Dec. Mar.	N. Y.	6	7	6
181	Smith's Cider	m.l.	r. ob. c.	y. r.	g.	Dec. Mar.	Penn.	5	4	7
182	Smokehouse	m.l.	r. ob.	y. c.	g.	Sept. Feb.	Penn.	5	7	8
183	Somerset of N. Y.	s.m.	r. c.	w. y. ru.	v. g.	Sept. Oct.	N. Y. ?	9	7	5
184	Sops of Wine	m.	r.	y. r.	g.	Aug. Sept.	Eur.	4	6	6
185	Speed Sweet	m.l.	r. f.	y.	g.	Aug. Sept.	Am.	5	5	1
186	Stark	l.	r. c.	g. y. r.	g.	Jan. May.	Ohio. ?	5	6	8
187	Stillman's Early	s.	r. c.	y. r.	g.	July. Aug.	N. Y.	7	4	2
188	St. Lawrence	l.	ob. c.	y. c.	v. g.	Sept. Oct.	Can. ?	8	8	9
189	Striped Bellflower	l.	o. c.	w. r.	g.	Oct. Jan.	Ohio. ?	2	6	5
190	Summer Bellflower, N. Y.	m.	ov. c.	y. o.	g.	Aug. Sept.	N. Y.	6	7	6
191	Summer Greening	m.	r.	g. y.	v. g.	Sept.	Mich. ?	8	7	4
192	Summer Hagloe	l.	r. ob.	w. y. r.	v. g.	Aug. Sept.	N. J. ?	5	7	7
193	Summer Pippin (<i>Champlain</i>) ..	m.l.	r. o. c.	y. c.	g.	Aug. Sept.	N. Y. ?	7	8	8
194	Summer Pound Royal	l.	r. ob. c.	g. w.	g.	Aug. Sept.	Am.	6	8	7
195	Summer Queen	l.	r. c.	y. r.	g.	Aug. Sept.	N. Y. ?	5	7	6
196	Summer Rambo (<i>Rambour</i>)	l.	ob.	g. y. r.	g.	Sept.	Fr.	6	8	6
197	Summer Rambo (<i>Mich.</i>)	m.	r. f.	w. y. r.	v. g.	Sept.	Ind.	9	9	4
198	Summer Rose	s.	r.	y. r.	b.	Aug.	N. J.	8	7	5
199	Summer Sweet Paradise	l.	r. f.	g. y.	v. g.	Aug. Sept.	Penn.	4	7	4
200	Swaar	l.	r. ob.	y. o.	b.	Dec. Apr.	N. Y.	9	6	4
201	Sweet Baldwin	m.	r. ob.	y. r.	g.	Oct.	Am.	---	5	---
202	Sweet Rambo	m.	r. ob.	y. r.	g.	Oct. Dec.	Penn. ?	2	5	---
203	Sweet Vandevere	m.	r. ob.	y. r.	g.	Nov. Mar.	Am.	---	6	---
204	Table Greening	m.	r.	g.	g.	Dec. Mar.	Me.	---	---	---
205	Talman Sweet	m.	r.	w. y. r.	g.	Nov. Apr.	R. I.	4	7	6
206	Tetofsky	m.	r. ob. c.	y. r.	g.	Aug.	Rus.	5	7	---
207	Tewksbury Blush	s.	ob.	y. r.	v. g.	Jan. July.	N. J.	6	6	5
208	Toole's Indian Raricripe	l.	r. c.	g. y. r.	g.	Sept. Oct.	Am.	6	8	6
209	Townsend	m.	ob. c.	y. r.	g.	Aug. Sept.	Penn.	6	6	7
210	Trenton Early	m.l.	r. ov.	y. r.	g.	Aug.	Am. ?	6	6	8
211	Twenty Ounce	v. l.	r.	g. y. r.	g.	Oct. Jan.	Conn.	5	7	8
212	Twin	m.l.	ob.	y. w. r.	g.	Oct. Nov.	Am. ?	6	8	7

SECTION I.—APPLES—CONTINUED.

NUMBER.	LOCALITY.					REMARKS.
	East.	Center.	South.	Southern Lake Shore.	Northern Lake Shore.	
177	*	---	---	---	---	Moderate grower. One of the finest and most beautiful dessert apples of its season.
178	*	*	*	*	---	Tree hardy, vigorous, upright, spreading, productive. Like Fameuse, but superior to it.
179	*	*	*	---	---	Slow grower. Prolific. A desirable dessert apple. Always perfect and even sized.
180	*	---	---	---	---	Tree vigorous, spreading, productive. Little known. Not especially desirable.
181	---	*	*	---	---	Very productive, vigorous, straggling. Valued for market purposes.
182	*	*	---	---	---	Vigorous, spreading, productive. Culinary, market.
183	*	---	---	---	---	Tree vigorous, spreading, productive. A fine family fruit. Deserving of more attention.
184	*	*	*	*	*	Tree vigorous, upright, productive. Widely disseminated, but not valuable.
185	*	*	*	*	*	Fruit generally scabby. Going out of cultivation.
186	†	*	†	†	*	Tree vigorous, hardy, productive. Fruit good enough to sell, if not to eat.
187	*	---	---	---	---	Tree upright, productive. Little known. Not desirable compared with others in season.
188	**	**	*	**	*	Tree very vigorous; productive. Highly and justly valued. Sometimes cracks and scabs.
189	*	*	*	*	*	Known at Adrian as Fall or Striped Gilliflower. Large and showy but not profitable or valuable.
190	*	*	*	*	---	Vigorous, upright, productive. Not quite good enough. Little known.
191	*	*	---	---	---	Upright, productive. Esteemed in parts of Oakland Co. Not much known.
192	*	---	---	---	---	Vigorous, productive. An old and useful culinary variety.
193	*	*	*	*	---	Tree vigorous; forms a round head; productive. A valuable variety.
194	*	*	*	*	---	Very vigorous. Productive. A profitable market apple for its season.
195	*	*	*	*	*	Liable to scab. One of the best cooking apples. Popular.
196	*	*	*	*	---	A large, vigorous tree; moderately productive. Rarely planted. Profitableness doubtful.
197	*	*	*	---	---	Tree similar to Rambo. Also the fruit, with similar tendency to overbear. Superior flavor.
198	*	*	*	---	*	Tree moderately vigorous, productive. One of the finest dessert fruits of its season.
199	*	*	*	---	---	Tree spreading, drooping, moderate, regular bearer. Very desirable among sweet apples.
200	*	*	*	*	*	Can only be recommended as an amateur fruit. Tree lacks hardiness. Fruit often imperfect.
201	*	---	*	---	*	Tree very vigorous, upright, spreading, productive.
202	*	---	---	---	---	Tree vigorous, upright; a tardy bearer. Little known. Of doubtful value here.
203	*	---	*	---	---	Tree a crooked grower; productive. Not disseminated. Too many competitors.
204	---	---	*	---	---	Reported only from the southern district. Little known.
205	*	*	**	*	**	Best winter baking apple. Very popular.
206	*	*	*	*	*	Of doubtful value, except for its great hardiness and vigor.
207	*	*	*	---	*	Tree vigorous, upright, productive. A fine long keeping table fruit.
208	*	*	*	*	---	Tree vigorous, upright, moderately productive. A showy, attractive and profitable market fruit.
209	*	---	---	---	---	Tree vigorous, upright, spreading, productive. Little known; almost "very good."
210	*	*	*	*	---	Tree moderately vigorous, productive, hardy. A fine profitable orchard fruit.
211	*	*	*	*	*	Fruit sometimes imperfect in Lenawee Co. Very profitable for market.
212	*	*	---	---	---	Probably an old unrecognized fruit; bears in pairs, hence the local name. Profitable.

SECTION I.—APPLES—CONTINUED.

NUMBER.	NAMES.	DESCRIPTIONS.						USE AND VALUE. Scale 1 to 10.		
		Size.	Form.	Color.	Quality.	Season.	Origin.	Dessert.	Cooking.	Market.
213	Vandevere.....	m.	ob.	y. r.	g.	Nov. Mar.	Del.	7	8	8
214	Wagener.....	m.	r. ob.	y. c.	v. g.	Nov. Mar.	N. Y.	8	4	5
215	Walpole.....	m.	r.	y. r.	v. g.	Aug. Sept.	Mass.	7	5	2
216	Washington Royal.....	m.l.	r. ob.	y. g. r.	v. g.	Dec. June.	Mass.	7	6	----
217	Washington Strawberry.....	l.	r. c. f.	y. r.	v. g.	Sept. Oct.	N. Y.	7	7	8
218	Water.....	m.	r. c.	w. y. c.	v. g.	Oct. Dec.	Penn.	8	6	7
219	Wealthy's Favorite.....	m.	r. ob.	y. c.	v. g.	Dec. Feb.	Mich.	8	6	2
220	Western Spy.....	m.l.	r. ob.	y. c.	g.	Nov. June.	Ohio.	----	8	6
221	Westfield Seeknofurther.....	m.l.	r. c.	g. r. ru.	b.	Oct. Mar.	Conn. ?	7	3	5
222	White Doctor.....	l.	r. ob.	g. y.	g.	Sept. Oct.	Penn.	6	9	8
223	White Juneating (<i>Early May</i>).....	m.s.	r. f.	g. y. r.	g.	July.	Eur.	4	8	5
224	White Pippin.....	l.	r. ob. l.	g. w. y.	v. g.	Jan. Apr.	Am. ?	6	7	5
225	White Spanish Reinette.....	v. l.	r. ob.	y. g. o. r.	v. g.	Oct. Jan.	Spain.	9	10	7
226	White Sweet.....	m.	r. c.	y. r.	v. g.	Sept. Oct.	N. J.	6	8	4
227	Williams' Favorite.....	m.	r. o. c.	r.	g.	Aug. Sept.	Mass.	7	5	7
228	Willow Twig.....	m.	r. c. ob.	y. r.	g.	Dec. May.	Vir.	5	7	7
229	Wine (<i>Hay's Winter</i>).....	m.l.	r. f.	d. r. y.	g.	Oct. Mar.	Del.	7	7	6
230	Winesap.....	m.	r. ob. c.	d. r. y.	v. g.	Nov. May.	N. J.	6	6	4
231	Winter Pippin, of Mich.....	m.l.	r. ob.	g. y.	g.	Dec. May.	N. Y.	7	7	8
232	Winter Sweet Paradise.....	m.l.	r. ob.	g. b.	v. g.	Nov. Mar.	Penn.	5	5	2
233	Winthrop Greening.....	l.	ob.	g. y. ru.	g.	Sept.	Me.	7	7	6
234	Woolcot (<i>Steele</i>).....	v. l.	r. c. f.	y. r.	v. g.	Sept. Oct.	Can. ?	7	8	5
235	Yellow Bellflower.....	v. l.	o. c.	g. y. r.	v. g.	Dec. Mar.	N. J.	8	10	7
236	Yellow Newtown Pippin.....	m.	r. ob. l.	y. r.	b.	Dec. May.	N. Y.	10	8	3

SECTION I.—APPLES—CONTINUED.

NUMBER.	LOCALITY.					REMARKS.
	East.	Center.	South.	Southern Lake Shore.	Northern Lake Shore.	
213	*	*	*	*	*	Distinct from N. Y. Vandevere. This variety is widely planted. Valuable.
214	*	**	*	**	**	Very early bearer; ruining the tree unless thinned and highly cultivated. Fine dessert apple.
215	*	---	---	---	---	Tree of moderate vigor. Comes in the season of the summer fruits. Hence less valued.
216	*	---	---	---	---	Tree vigorous, prolific. Promising; but may prove too variable in size.
217	*	*	*	*	---	Tree vigorous. Bears early and abundantly. A valuable variety for general purposes.
218	*	*	---	*	---	Tree vigorous, upright. Blooms late. A fine mild dessert apple. Not widely known.
219	*	---	---	---	---	Origin, Wayne Co. Requires good culture. An excellent, mild, dessert apple.
220	*	---	---	---	---	Tree rather vigorous; productive. Wood soft, spongy. Of very doubtful value.
221	*	*	*	*	*	Popular old variety for home use. Somewhat lacking in productiveness.
222	*	*	---	---	---	Tree strong and prolific. A showy and profitable culinary and market fruit. Little known.
223	*	---	*	---	---	Of very poor quality. Short lived. Desirable for its extreme earliness only.
224	*	*	*	*	*	Tree vigorous, upright, productive. Fruit of the Newtown Pippin class. Popular south.
225	*	---	---	---	---	Tree and fruit much like Fall Pippin, but keeps longer. Seldom seen under its own name.
226	*	---	---	---	---	Introduced into Wayne Co. as Honey Sweet.
227	*	*	*	*	---	Tree a good grower; productive. Valued by some as a market variety.
228	*	*	*	*	*	Hardy, vigorous, productive. Fruits vary greatly in size. Keep and sell well.
229	---	*	---	---	---	Hardy, prolific. A fine, though little known, winter fruit.
230	*	*	*	*	*	Irregular grower; good, early bearer. Good for dessert, market, or cider.—Downing.
231	*	---	---	---	*	Strong, upright grower; slender shoots. Profitable. Probably an unrecognized eastern sort.
232	*	---	*	---	---	Tree hardy, upright, vigorous; a tardy bearer. Productive. Little grown.
233	*	---	---	---	---	Tree vigorous, upright, spreading. A large, showy fruit. Little grown.
234	---	---	*	---	---	Fruit uneven in size. Only locally known. Valued where grown.
235	*	*	*	*	---	Needs dry warm soils. High, rich flavor. Uneven in size. Often unproductive. Not successful at the north.
236	*	*	*	*	---	Tree and fruit like the Green N. P. Some doubt their distinctness.

SECTION II.—APPLES—CRABS.

ABBREVIATIONS FOR THIS SECTION.

Form.

a. angular. *o.* oblong.
c. conical. *ob.* oblate or obtuse.
f. flattened. *ov.* oval or ovate.
l. lopsided or oblique. *r.* roundish.

NUMBER.	NAMES.	DESCRIPTIONS.						USE AND VALUE. Scale 1 to 10.		
		Size.	Form.	Color.	Quality.	Season.	Origin.	Dessert.	Cooking.	Market.
1	Brier's Sweet.....	l.	r. c.	y. c.	b.	Sept.	Wis.	2	10	8
2	Byers' Beauty.....	m.	r. c. f.	d. r.	qs.	Sept.	Mich.	5	7	7
3	Hyslop.....	l.	r. ov.	d. r. o.	qs.	Sept. Nov.	Am.	4	8	10
4	Large Red.....	l.	r. ov.	y. r.	qs.	Sept. Oct.	Am.	4	6	6
5	Large Yellow.....	l.	r. ov.	y. o.	qs.	Sept. Oct.	Am.	5	8	8
6	Montreal Beauty.....	l.	r. ob.	y. r.	qs.	Sept. Oct.	Am.	4	7	
7	Red Siberian.....	s.	r. ob.	y. s.	qs.	Sept. Oct.	Eur.	3	6	4
8	Soulard.....	m.	ob.	gs. y.	qs.	Nov. Dec.	Mo.	2	5	2
9	Transcendent.....	l.	r. ob.	y. c.	qs.	Sept.	Am.	5	8	10

SECTION III.—APRICOTS.

ABBREVIATIONS FOR THIS SECTION.

Form.

Color.

c. conical. *o.* oblong.
co. compressed. *ov.* oval.
f. flattened. *r.* roundish.
o. orange.
r. red.
y. yellow.

NUMBER.	NAMES.	DESCRIPTIONS.						USE AND VALUE. Scale 1 to 10.		
		Size.	Form.	Color.	Quality.	Season.	Origin.	Dessert.	Cooking.	Market.
1	Breda.....	m.	r.	o.	v. g.	b. Aug.	Eur.	7	---	8
2	Early Golden.....	s.	r. ov.	o.	v. g.	m. July.	Am.	6	---	6
3	Hemskirke.....	l.	r. co.	o. r.	b.	e. July.	Eur.	8	---	5
4	Large Early.....	m.	o. co.	o.	b.	m. July.	Eur.	8	---	3
5	Moorpark.....	l.	r.	o. v.	b.	b. Aug.	Eur.	9	---	6
6	Peach.....	v. l.	r. f. co.	y. o.	b.	b. Aug.	Eur.	10	---	8
7	Red Masenline.....	s.	r.	y. o. r.	v. g.	m. July.	Eur.	6	---	8
8	St. Ambroise.....	l.	r. co.	y. r.	b.	m. Aug.	Eur.	9	---	4
9	Turkey.....	m.	r.	y. o.	v. g.	m. Aug.	Eur.	8	---	6

SECTION II.—APPLES—CRABS.

ABBREVIATIONS FOR THIS SECTION.

Color.		
<i>b.</i> brown.	<i>g.</i> green.	<i>ru.</i> russet.
<i>c.</i> carmine.	<i>o.</i> orange.	<i>s.</i> scarlet.
<i>cr.</i> crimson.	<i>p.</i> purplish.	<i>v.</i> vermillion.
<i>d.</i> dark.	<i>r.</i> red.	<i>y.</i> yellow.

NUMBER.	LOCALITY.					REMARKS.
	East.	Center.	South.	Southern Lake Shore.	Northern Lake Shore.	
1	---	*	---	†	*	For preserves. Very Valuable. A cross of the Bailey apple upon the Siberian crab.
2	---	**	---	*	**	Tree slender, weak grower. A very beautiful crab. Origin Van Buren county.
3	*	*	*	*	*	An exceedingly rich looking crab. Keeps well. Sells well.
4	*	*	*	*	*	A vigorous tree; productive. Has the calyx large and prominent.
5	*	*	*	*	*	One of the most beautiful and prolific. Bears in alternate years.
6	*	*	*	*	**	Unexcelled in beauty of appearance. Said to be less beautiful at the north.
7	*	*	*	*	*	Sometimes called "small red." Quite small, beautiful. Often scabby on old trees.
8	---	---	---	*	*	Of little value except for cider and cooking.
9	**	**	**	**	**	The largest, most productive and beautiful of the older crabs.

SECTION III.—APRICOTS.

Apricots are recommended for dessert or amateur purposes, with little reference to actual profit; as, owing to occasional loss of the very early bloom, and liability to injury from extreme cold in unfavorable localities, together with extreme liability to the depredations of the curculio, little pecuniary return can be confidently anticipated from them. Since they are recommended only as amateur fruits, they are not quoted for cooking.

NUMBER.	LOCALITY.					REMARKS.
	East.	Center.	South.	Southern Lake Shore.	Northern Lake Shore.	
1	*	*	*	*	*	Hardy, productive, excellent. Kernel sweet.
2	†	†	†	†	†	Tree vigorous. Branches long, slender. Freestone.
3	†	†	†	†	†	Beautiful, excellent. Stone not perforated. Kernel bitter.
4	†	†	†	†	†	Vigorous. One of the best early varieties. Freestone. Kernel bitter.
5	*	*	*	*	†	One of the most popular. Stone perforated. Kernel bitter.
6	*	*	*	*	*	Considered the finest variety. Stone perforated. Kernel bitter.
7	†	†	†	†	†	Hardy, productive. Not high flavor. Kernel bitter.
8	†	†	†	†	†	Earlier than Moorpark. Juicy, sweet, rich.
9	†	†	†	†	†	Old. Later than Moorpark. Stone impervious. Kernel sweet.

SECTION IV.—BLACKBERRIES.

ABBREVIATIONS FOR THIS SECTION.

Form.

c. conical. *ov. oval.*
o. oblong. *r. roundish.*

NUMBER.	NAMES.	DESCRIPTIONS.						USE AND VALUE. Scale 1 to 10.		
		Size.	Form.	Color.	Quality.	Season.	Origin.	Dessert.	Cooking.	Market.
1	Ancient Britain.....	l.	o. ov.	b.	v. g.	l.	Ark.	8	7	9
2	Barnard	l.	o. ov.	b.	v. g.	l.	Wis. ?	8	7	9
3	Dorchester	m.	o. c.	b.	b.	m.	Mass.	7	5	7
4	Kittatinny.....	l.	r. c.	b.	b.	m.	N. J.	10	10	10
5	New Rochelle (<i>Lawton</i>).....	l.	ov.	b.	g.	l.	N. Y.	9	9	8
6	Snyder	m.	r. ov.	b.	v. g.	c.	Ind.	8	8	9
7	White Seedling.....	m.	ob.	w.	g.	m.	Mich.	10	....	6
8	Wilson's Early.....	l.	o. ov.	b.	v. g.	c.	N. J.	7	3	9

SECTION V.—CHERRIES—HEARTS AND BIGARREAU.

ABBREVIATIONS FOR THIS SECTION.

Form.

a. angular. *l. long.*
c. conical. *ob. obtuse.*
co. compressed. *ov. ovate or oval.*
h. heart-shaped. *r. roundish.*

The numbers under the head of "cooking" recommend strictly for canning or drying with sugar as raisins.

NUMBER.	NAMES.	DESCRIPTIONS.							USE AND VALUE. Scale 1 to 10.		
		Size.	Form.	Color.	Quality.	Season.	Class.	Origin.	Dessert.	Cooking.	Market.
1	American Heart.....	l.	h.	a. b. r.	g.	m. June.	h.	Am.	6	---	7
2	Baumann's May.....	s.	ov. h. a.	d. r.	g.	b. June.	b.	Ger.	3	---	3
3	Belle D'Orleans.....	l.	r. h.	w. y. r.	v. g.	b. June.	h.	Fr. ?	8	---	8
4	Bigarreau (<i>Yellow Spanish</i>)...	v. l.	ob. h. co.	y. c. r.	b.	e. June.	b.	Eur.	10	6	7
5	Bigarreau de Mezel.....	v. l.	ob. h.	d. r. b.	g.	b. July.	b.	Eur.	6	6	8
6	Bigarreau Gros Cœur.....	l.	r. h.	d. r.	g.	b. July.	b.	Fr.	5	---	---
7	Black Eagle.....	m.	ob. h.	b.	b.	b. July.	h.	Eng.	9	8	9
8	Black Hawk.....	l.	ob. h. co.	p. b.	v. g.	e. June.	h. b.	Ohio.	9	6	9
9	Black Heart.....	l.	h.	b.	v. g.	e. June.	h.	Eur.	9	6	9
10	Black Tartarian.....	v. l.	ob. h.	p. b.	v. g.	m. June.	h. b.	Rus.	9	8	9
11	Brant.....	l.	r. co. h. a.	r. b.	v. g.	m. June.	h. b.	Ohio.	8	---	7
12	Burr's Seedling.....	l.	h.	w. y. r.	v. g.	e. June.	h.	N. Y.	9	6	8
13	Champagne.....	m.	r. h.	r.	v. g.	e. June.	h.	N. Y.	8	---	6

SECTION IV.—BLACKBERRIES.

ABBREVIATIONS FOR THIS SECTION.

Color.

b. black.*w.* white.

NUMBER.	LOCALITY.					REMARKS.
	East.	Center.	South.	Southern Lake Shore.	Northern Lake Shore.	
1	---	---	---	*	---	Strong grower and prolific. Well worthy of extended trial.
2	.	---	---	*	---	Comes from west of Lake Michigan, with a reputation for hardiness.
3	*	*	*	*	---	An old New England variety. Of superior flavor.
4	**	**	**	**	*	Too well known to need description. Sometimes rusts or mildews.
5	*	*	*	*	*	Plant grows late. Tender. Fruit colors before fully mature.
6	*	*	*	*	---	Not large, but good. Is said to be very hardy and prolific.
7	---	---	---	---	*	A wild seedling found in the woods in the vicinity of Grand Traverse.
8	*	*	*	*	**	One of the largest. Lacks richness. Valued for market.

SECTION V.—CHERRIES—HEART AND BIGARREAU.

ABBREVIATIONS FOR THIS SECTION.

Color.

cr. crimson.*d.* dark.*p.* purplish.*r.* red.

Class.

b. bigarreau.*h.* heart.

a. amber.
b. black.
br. bright.
c. carmine.

w. whitish.
y. yellowish.

NUMBER.	LOCALITY.					REMARKS.
	East.	Center.	South.	Southern Lake Shore.	Northern Lake Shore.	
1	*	*	*	*	---	Vigorous, spreading, productive; but variable in quality.
2	*	*	*	*	---	One of the earliest and most prolific. Must give place to larger and better sorts.
3	*	*	*	*	*	Largest and best of the very early varieties. Tree vigorous, spreading, productive.
4	*	*	*	*	*	Downing says—"Largest, most beautiful and delicious of cherries." Often cracks and rots.
5	---	*	*	---	---	Supposed to be identical with Great Bigarreau, and Large Red Proal.
6	---	---	---	---	---	Of French origin. Somewhat rare in this country.
7	*	*	*	*	*	Excellent. Requires age before it will bear profusely.
8	*	*	*	*	---	Fine tree. Fruit much like Bigarreau in its general qualities.
9	*	*	*	*	---	Very old. Tree large and hardy. The abundant fruit is of fine quality.
10	**	**	**	**	**	A rapid, erect grower. Prolific. Fruit very large and showy, but not of the highest quality.
11	*	*	*	*	---	One of the many fine Ohio varieties of comparatively recent origin.
12	*	*	*	*	---	A vigorous tree. Bears early and profusely.
13	*	---	---	---	---	Originated with Mr. Downing at Newburgh, N. Y.

SECTION V.—CHERRIES—CONTINUED.—HEART AND BIGARREAU.

NUMBER.	NAMES.	DESCRIPTIONS.							USE AND VALUE, Scale 1 to 10.		
		Size.	Form.	Color.	Quality.	Season.	Class.	Origin.	Desert.	Cooking.	Market.
14	China Bigarreau.....	m.	r. h.	a. r.	b.	e. June.	b.	?	10	----	4
15	Cleveland.....	l.	r. h.	r. y.	v. g.	m. June.	b.	Ohio.	9	6	8
16	Coe's Transparent.....	m.	r.	a. r.	b.	m. June.	h.	Conn.	10	6	5
17	Delicate	m.l.	r. ob.	a. y. r.	b.	e. June.	h.	Ohio.	10	----	5
18	Doctor.....	m.	r. h.	y. r.	v. g.	b. June.	h.	Ohio.	8	----	7
19	Downer's Late.....	m.	r. h. ov.	a. r.	v. g.	b. July.	h.	Mass.	9	6	10
20	Downton.....	l.	ob. h.	br. y. r.	v. g.	e. June.	h.	Eng.	9	----	6
21	Early Purple Guigne.....	m.	r. h.	d. r. p.	v. g.	b. June.	h.	Eur.	8	6	5
22	Elton.....	l.	l. h.	y. br. r.	v. g.	m. June.	b.	Eng.	9	7	9
23	Governor Wood	l.	r. h.	y. r.	v. g.	m. June.	h.	Ohio.	9	6	8
24	Kirtland's Mary.....	l.	r. h.	y. r.	v. g.	b. July.	b.	Ohio.	8	----	7
25	Knight's Early Black.....	l.	ob. h.	d. p. b.	v. g.	m. June.	h.	Eng.	8	6	6
26	Logan.....	m.	ob. h.	p. b.	v. g.	e. June.	b.	Ohio.	7	----	6
27	Manning's Mottled.....	l.	r. h. co.	a. r.	v. g.	e. June.	h.	Mass.	8	----	5
28	Merveille de Septembre.....	s.	ob. h.	d. r.	g.	Sept.	b.	Fr.	1	----	2
29	Napoleon Bigarreau.....	v. l.	l. h.	y. r.	g.	b. July.	b.	Eur.	6	6	8
30	Ohio Beauty.....	l.	ob. h.	r.	v. g.	m. June.	h.	Ohio.	7	----	8
31	Osceola.	m.l.	r. h.	d. r.	v. g.	e. June.	h.	Ohio.	8	----	7
32	Pontiac.....	l.	ob. h.	d. p. r.	v. g.	e. June.	h. b.	Ohio.	8	----	8
33	Powhattan	m.	r. co.	d. r.	g.	m. July.	h. b.	Ohio.	5	----	9
34	Red Jacket.....	l.	ob. h.	a. r.	g.	b. July.	h. b.	Ohio.	7	7	9
35	Rivers' Early Amber.....	m.	h.	a.	g.	b. June.	h.	Eng.	6	----	7
36	Roberts' Red Heart.....	m.	r. h.	a. r.	v. g.	e. June.	h.	Mass.	7	----	8
37	Rockport	l.	r. ob. h.	r. a.	b.	m. June.	b.	Ohio.	9	7	9
38	Sparhawk's Honey.....	m.	r. h.	a. r.	v. g.	e. June.	h.	Mass.	8	8	8
39	Tecumseh	m.l.	ob. h.	r. p.	g.	e. July.	h. b.	Ohio.	6	----	8
40	Tradesant's Black Heart..	l.	h.	b.	g.	m. July.	b.	Eur.	4	----	6
41	Transparent Guigne.....	s.	ov. h.	y. w. r.	g.	b. July.	h.	Eur. ?	6	----	2
42	White French Guigne.....	s.	r. ob. c.	w. y. c.	g.	m. July.	h.	Fr. ?	3	----	----
43	White Tartarian.....	m.	ob. h.	w. y.	g.	m. July.	h. b.	Eur. ?	3	----	2
44	Wilkinson	m.	h. co.	d. r.	g.	b. July.	h.	Am. ?	2	----	2

SECTION V.—CHERRIES—CONTINUED.—HEART AND BIGARREAU.

NUMBER.	LOCALITY.					REMARKS.
	East.	Center.	South.	Southern Lake Shore.	Northern Lake Shore.	
14	*	*	*	----	----	Identity uncertain. The fruit intended is one of the very best in quality.
15	*	*	*	*	----	A seedling of Dr. Kirtland of Cleveland, Ohio. Tree thrifty, spreading, productive.
16	*	*	*	*	**	One of the finest and most beautiful of the heart (tender fleshed) varieties.
17	*	----	----	†	----	Delicate as its name imports. Excellent for home use.
18	*	*	*	*	----	Tree a free spreading grower. Good cultivation requisite to produce fine fruit.
19	**	**	*	**	----	One of the finest and most valuable late cherries. Of new England origin.
20	*	*	*	*	----	An English seedling. Supposed to have sprung from the Elton.
21	*	*	*	*	*	A moderate grower. One of the best of the very early cherries. Hardy for a Mazzard; but tender at the north.—(Parmelee.)
22	*	**	*	*	**	Originated in England in 1806. One of the best of its class and season.
23	**	**	*	**	†	Seedling of Dr. Kirtland. Every way desirable, except for its liability to rot.
24	*	*	*	*	----	Seedling of Dr. Kirtland. Desirable for either dessert or market.
25	*	**	*	*	*	A week earlier than Black Tartarian. Fine quality. Tree spreading.
26	*	*	*	*	----	Seedling of Dr. Kirtland. Ranks high in quality. But little known.
27	*	*	*	*	----	Tree vigorous, prolific. Named from the mottled appearance of the fruit.
28	*	*	*	*	----	A French variety. The latest of sweet cherries. Only valued as a curiosity.
29	*	*	*	*	**	Very large and showy. Very firm. Most valued for the market.
30	*	*	*	*	*	Seedling of Dr. Kirtland. Productive and valuable.
31	*	*	*	*	----	Seedling of Dr. Kirtland. Moderate grower and bearer. Flavor excellent.
32	*	*	*	*	----	Seedling of Dr. Kirtland. Vigorous, productive. Valuable either as a table or market fruit.
33	†	----	----	†	----	Seedling of Dr. Kirtland. One of the best for market purposes.
34	†	*	----	†	----	Seedling of Dr. Kirtland. Vigorous, spreading, productive. Very desirable for market.
35	----	----	----	†	----	Seedling of Thomas Rivers; England. Like Early White Heart, but later.
36	*	----	----	*	----	Tree hardy, a free grower; productive. Origin, Massachusetts.
37	*	*	*	*	----	Seedling of Dr. Kirtland. Very highly esteemed. A good bearer.
38	*	*	*	*	----	Origin, Massachusetts. Vigorous. Productive when trees have acquired sufficient age.
39	*	*	*	*	----	Seedling of Dr. Kirtland. Moderate grower; productive. Desirable for its lateness.
40	*	----	*	----	----	A European variety. Vigorous; but not particularly desirable. Very little grown.
41	*	----	*	----	----	A very pretty little fruit, for dessert, but not otherwise desirable.
42	*	----	----	----	----	A vigorous, foreign variety. Not valuable, unless for its late maturity.
43	*	----	*	----	----	A vigorous tree. It has not proved very productive.
44	----	----	----	†	----	But little grown. Its value not fully determined.

SECTION VI.—CHERRIES--DUKE AND MORELLO.

ABBREVIATIONS FOR THIS SECTION.

Form.		Color.	
<i>co. compressed.</i>	<i>ov. oval.</i>	<i>a. amber.</i>	<i>p. purplish.</i>
<i>h. heartshaped.</i>	<i>r. roundish.</i>	<i>b. bright.</i>	<i>r. red.</i>
<i>ob. oblate</i>		<i>d. dark.</i>	<i>y. yellow.</i>

NUMBER.	NAMES.	DESCRIPTIONS.							USE AND VALUE. Scale 1 to 10.		
		Size.	Form.	Color.	Quality.	Season.	Class.	Origin.	Desert.	Cooking.	Market.
1	Archduke.....	l.	ob. h.	d. r.	v. g.	m. July.	d.	Eur.	7	6	7
2	Belle de Choisey.....	m.	r. ob.	y. a. r.	b.	m. June.	d.	Fr.	10	5	3
3	Belle Magnifique.....	l.	r. h.	b. r.	v. g.	m. Aug.	d.	Fr.	8	6	8
4	Carnation.....	l.	r.	y. w. r.	g.	m. July.	-----	Fr.?	6	5	5
5	Donna Maria.....	m.	r.	d. r.	g.	m. July.	m.	Eur.?	4	6	6
6	Duchesse de Palluau.....	m.	r. h. co.	d. p.	g.	m. June.	d.	Eur.	5	5	6
7	Imperatrice Eugenie.....	l.	r. ob.	d. r.	v. g.	m. June.	d.	Eur.	7	6	7
8	Jeffrey's Duke.....	m.	r. ob.	b. r.	v. g.	m. June.	d.	Eur.	6	6	6
9	Kentish (<i>Early Richmond</i>)....	m.	r. ob.	d. r.	v. g.	m. June.	m.	Eur.	5	8	10
10	Late Duke.....	l.	ob. h.	d. r.	v. g.	m. July.	d.	Eur.	7	7	6
11	Late Kentish (<i>Common Red</i>)..	m.	r. ob.	d. r.	g.	m. July.	m.	Eur.	4	8	8
12	Leib.....	m.	r.	r.	g.	July.	m.	Eur.?	-----	-----	-----
13	Louis Philippe.....	l.	r.	d. p. r.	v. g.	e. July.	m.	Fr.	4	10	10
14	May Duke.....	l.	r. ob. h.	d. r.	b.	m. June.	d.	Eur.	8	8	10
15	Montmorency Ordinaire.....	l.	r. ob.	d. r.	v. g.	e. June.	m.	Eur.	5	8	10
16	Morello.....	l.	ob. h.	d. r.	v. g.	m. July.	m.	Eur.	5	10	10
17	Plumstone Morello.....	l.	r. h.	d. r.	g.	b. Aug.	m.	Eur.	1	10	3
18	Reine Hortense.....	v. l.	r. ov.	b. r.	v. g.	m. July.	d.	Fr.	6	7	6
19	Royal Duke.....	l.	r. ob.	d. r.	g.	e. June.	d.	Eur.	6	7	7
20	Rumsey's Late Morello.....	l.	r. h.	b. r.	g.	e. Aug.	m.	Am.	1	7	2

SECTION VI.—CHERRIES—DUKE AND MORELLO.

ABBREVIATIONS FOR THIS SECTION.

Class.
d. duke.
m. morello.

NUMBER.	LOCALITY.					REMARKS.
	East.	Center.	South.	Southern Lake Shore.	Northern Lake Shore.	
1	*	*	*	*	----	Tree vigorous, upright, hardy, prolific.
2	*	**	*	*	----	One of the best dessert cherries of any class; but a thin bearer. When top-grafted on Morello, proves productive.
3	*	*	*	*	*	Moderate grower; productive. Good for dessert when fully ripe.
4	*	**	*	*	----	A beautiful, large, light red cherry; highly esteemed where known.
5	*	----	----	*	----	A small tree. Very prolific.
6	*	----	----	*	----	A comparatively new variety; but little disseminated.
7	----	----	----	†	----	A new French cherry. An early and prolific bearer.
8	*	----	----	†	----	A tree of compact habit and slow growth. A prolific bearer.
9	**	*	**	**	*	Better known here as Early Richmond. One of the most profitable market cherries. Not as good as several of the Dukes.
10	*	*	*	*	----	Valuable for dessert or cooking. Ripening after Mayduke.
11	*	*	*	*	----	Emphatically the pie cherry of this country.
12	----	----	----	†	----	A newly introduced variety. Claimed to withstand the winters of the northwest.
13	*	*	*	*	----	A strong, healthy tree, intermediate between Dukes and Morellos. Productive; valuable.
14	**	**	**	**	**	The type of its class. One of the oldest and most popular cherries.
15	----	†	----	†	----	Larger than Kentish, and ten days later.
16	*	*	*	*	*	Highly esteemed for preserving and other culinary purposes.
17	*	*	*	*	*	One of the best culinary sorts; but a slow grower and a tardy bearer.
18	*	**	*	*	*	A healthy and beautiful tree. A popular and desirable variety.
19	*	*	*	*	----	An upright, compact grower. Later than Mayduke.
20	*	*	----	*	----	Ripens gradually through August and September.

SECTION VII.—CURRANTS.

ABBREVIATIONS FOR THIS SECTION.

Form of Bunch.

l. long.
m. medium.
s. short.

Color.

b. black. *r.* red.
br. bright. *w.* white.
d. dark.

NUMBER.	NAMES.	DESCRIPTIONS.						USE AND VALUE. Scale 1 to 10.		
		Size.	Form of Bunch.	Color.	Flavor.	Season.	Origin.	Dessert.	Cooking.	Market.
1	Black Naples.....	l.	s.	b.	a. mu.	m. July.	Eur.	1	8	8
2	Cherry.....	l.	s.	r.	v. a.	m. July.	Eur.	4	8	9
3	La Hative.....	l.	m.	d. r.	m. a.	m. July.	Fr.	8	8	....
4	La Versailles.....	l.	s.	d. r.	a.	m. July.	Fr.	7	8	8
5	Red Dutch.....	m.	m.	d. r.	m. a.	b.m. July.	Eur.	9	10	10
6	Victoria.....	m.	l.	br. r.	v. a.	e. July.	Eng.	6	7	7
7	White Dutch.....	m.	m.	w.	a.	b.m. July.	Eur.	10	7	6
8	White Grape.....	l.	m.	w.	a.	b.m. July.	Eur.	9	7	7

SECTION VIII.—GOOSEBERRIES.

ABBREVIATIONS FOR THIS SECTION.

Form of Berry.

ov. oval.
r. round.

NUMBER.	NAMES.	DESCRIPTIONS.						USE AND VALUE. Scale 1 to 10.		
		Size.	Form of Berry.	Color.	Quality.	Season.	Origin.	Dessert.	Cooking.	Market.
1	Downing's.....	m. l.	r. ov.	w. gg.	v. g.	Aug.	N. Y.	10	9	9
2	Houghton's.....	s.	r.	b.	v. g.	Aug.	Mass.	8	10	10
3	Mountain.....	l.	r. ov.	r.	g.	m. Aug.	N. Y.	5	7	5
4	Pale Red.....	m.	r. ov.	r.	g.	Aug.	Am.	4	7	9
5	Smith's.....	l.	ov.	g.	v. g.	Aug.	Ver.	9	10	10

SECTION VII.—CURRANTS.

ABBREVIATIONS FOR THIS SECTION

Flavor.
a. acid.
m. moderate.
mu. musky.
v. very.

NUMBER.	LOCALITY.					REMARKS.
	East.	Center.	South.	Southern Lake Shore.	Northern Lake Shore.	
1	*	*	*	*	*	Good culinary fruit. Much sought in the market by foreigners.
2	*	*	*	*	*	Its size renders it popular. One of the most acid of currants.
3	---	---	†	---	*	The best of the less common kinds.—(Steere.)
4	*	**	*	*	*	By some believed to be superior to the cherry currant. Others think them identical.
5	**	**	**	**	**	Has no superior except in size. The best for all purposes.
6	*	*	*	**	**	Valuable rather late sort. It seems to be exempt from the attacks of the borer.
7	*	**	*	*	**	Better in quality, and in the habit of the plant, than White Grape.
8	*	**	*	*	**	Plant spreading, straggling growth. Larger, but not as good as White Dutch.

SECTION VIII.—GOOSEBERRIES.

ABBREVIATIONS FOR THIS SECTION.

Color.
b. brown. *r. red.*
g. green. *w. whitish.*

NUMBER.	LOCALITY.					REMARKS.
	East.	Center.	South.	Southern Lake Shore.	Northern Lake Shore.	
1	*	**	*	*	*	Fine, stocky, vigorous plant; quite thorny. The highest quality of fruit.
2	*	*	*	*	*	Slender and straggling, but vigorous and prolific.
3	*	*	*	*	---	A strong plant. Berry with a very thick skin.
4	*	*	*	*	*	An old sort of slender but upright growth.
5	*	*	†	†	*	Some doubt as to the vigor of the plant. A promising variety.

SECTION IX.—GRAPES—NATIVE.

ABBREVIATIONS FOR THIS SECTION.

FORM.

Bunch.

Berry.

t. broad. *o.* open or loose. *sh.* shouldered.
c. compact. *s.* short. *v.* very.
b. long.

r. round.
o. oblong.
ov. ovate or oval.

NUMBER.	NAMES.	DESCRIPTIONS.								USE AND VALUE. Scale 1 to 10.		
		SIZE.		FORM.		Color.	Quality.	Season.	Origin.	Dessert.	Cooking.	Market.
		Bunch.	Berry.	Bunch.	Berry.							
1	Adirendae.....	l.	l.	c. sh.	r.	p. b.	v. g.	b. Sept.	N. Y.	8	---	6
2	Agawam (<i>Rog. 15</i>).....	l.	l.	c. sh.	r.	d. r.	v. g.	m. Sept.	h. Mass.	7	---	7
3	Allen's Hybrid.....	m.l.	m.l.	sh. c.	r.	w. y.	b.	m. Sept.	h. Mass.	10	---	4
4	Alvey.....	m.l.	s.	sh.	r.	b.	v. g.	b. Sept.	Md.	5	---	5
5	Aminia (<i>Rog. 39</i>).....	---	l.	---	r.	b.	v. g.	m. Sept.	h. Mass.	8	---	---
6	Anna.....	---	---	---	---	g.	v. g.	Oct.	N. Y.	9	---	2
7	Belvidere.....	---	---	---	---	---	---	b. Sept.	Am.	---	---	---
8	Black Hawk.....	m.l.	l.	---	r.	b.	g.	Sept.	Penn.	---	---	---
9	Brighton.....	m.	l.	sh.	r.	r.	v. g.	Sept.	W. N. Y.	9	---	9
10	Canada (<i>Arnold's 16</i>).....	m.l.	m.l.	sh.	r.	b.	g.	m. Sept.	h. Ont.	8	---	3
11	Catawba.....	m.	l.	sh. o	r.	r.	v. g.	Oct.	Md.	9	---	6
12	Clinton.....	m.	s.	c. sh.	r.	b.	g.	Oct.	N. Y.	3	---	3
13	Concord.....	l.	m.l.	c. sh.	r.	b.	v. g.	m. Sept.	Mass.	7	---	10
14	Cornucopia (<i>Arnold's 2</i>).....	l.	l.	c. sh.	r.	b.	v. g.	m. Sept.	h. Ont.	6	---	1
15	Crevelling.....	m.l.	m.	c. sh.	r.	b.	v. g.	m. Sept.	Pa.	8	---	2
16	Croton.....	m.	s.m.	c. sh.	r.	g. y.	b.	b. Sept.	h. N. Y.	10	---	2
17	Delaware.....	s.	s.	c. sh.	r.	l. r.	b.	m. Sept.	N. J.?	10	---	10
18	Diana.....	l.	l.	c. l.	r.	r. l.	v. g.	e. Sept.	Mass.	6	---	6
19	Essex (<i>Rog. 41</i>).....	l.	l.	---	r.	b.	g.	m. Sept.	h. Mass.	---	---	---
20	Eumelan.....	l.	m.	c. sh.	r.	p. b.	v. g.	m. Sept.	N. Y.	9	---	2
21	Hartford Prolific.....	l.	l.	c. sh.	r.	b.	g.	b. Sept.	Conn.	4	---	6
22	Harbert (<i>Rog. 44</i>).....	---	l.	---	r.	b.	v. g.	m. Sept.	h. Mass.	---	---	---
23	Iona.....	l.	m.	c. sh.	r. o.	r.	b.	m. Sept.	N. Y.	10	---	6
24	Isabella.....	l.	l.	c. sh.	o.	b.	v. g.	e. Sept.	S. Car.	6	---	6
25	Isaiah.....	m.l.	l.	c. sh.	o.	p. b.	v. g.	m. Sept.	N. Y.	7	---	4
26	Ives.....	m.	m.	c. sh.	r. o.	b.	g.	e. Sept.	Ohio.	7	---	7
27	Janeville.....	---	m.l.	---	r.	b.	g.	b. Sept.	Am.	7	---	9
28	Kalamazoo.....	l.	l.	l. o.	r.	r.	v. g.	e. Sept.	Ohio.?	6	---	6
29	Lady.....	m.	l.	l. c.	r.	y. g.	b.	m. Sept.	Ohio.	9	---	---
30	Lindley (<i>Rog. 9</i>).....	m.	m.	l. c.	r.	r.	g.	m. Sept.	h. Mass.	5	---	7
31	Martha.....	m.	l.	sh. o.	r.	g. y.	g.	m. Sept.	Mo.	4	---	6
32	Massasoit (<i>Rog. 3</i>).....	m.	l.	s. sh.	r.	r.	g.	m. Sept.	h. Am.	6	---	4
33	Merrimac (<i>Rog. 10</i>).....	l.	l.	s. b. c.	r.	b.	g.	m. Sept.	h. Mass.	7	---	7

SECTION IX.—GRAPES—NATIVE.

ABBREVIATIONS FOR THIS SECTION.

Color.

a. amber. *l.* light. *r.* reddish.
b. black. *ti.* lilac. *w.* whitish.
d. dark. *p.* purple. *y.* yellowish.
g. greenish.

NUMBER.	LOCALITY.					REMARKS.
	East.	Center.	South.	Southern Lake Shore.	Northern Lake Shore.	
1	*	*	*	*	*	One of the finest very early grapes. Subject to mildew of the foliage.
2	*	*	*	*	*	Keeps well after gathering.
3	*	*	*	*	*	Its foreign blood seems to create a tendency to mildew. Fine-t of white grapes.
4	*	*	*	*	---	Has no specially valuable characteristics.
5	---	---	---	†	†	Very well esteemed by those who have fruited it.
6	---	---	---	---	---	Beautiful and excellent, but is rather late for our climate.
7	---	---	---	†	---	Early and hardy. Will compare in character and quality with Perkins.
8	---	---	---	†	---	Will possibly be valued where quality must be deferred to hardiness.
9	---	---	---	†	---	Highly promising. One-fourth Foreign.
10	---	---	*	†	---	One of the recent Canadian hybrids. Has yet to acquire a reputation in this State.
11	*	---	*	*	---	Is yet one of the best in localities where the season is long enough to ripen it.
12	*	*	*	*	*	Is seldom good, or even passable till ripened by frost.
13	**	**	**	**	**	Here as elsewhere, this is "the grape for the million."
14	---	---	*	†	---	Another Canadian hybrid, with a character yet to be established.
15	*	*	*	*	*	Possibly from defect of the bloom, this is a bad setter and a thin bearer.
16	*	*	*	*	---	A very desirable white grape, if preserved from mildew, to which it is very liable.
17	**	**	**	**	**	Slow grower. Fully as productive as Concord when well established.
18	*	*	*	*	*	Rather foxy, with a thick tough skin. One of the best keepers. A thin bearer on strong soils.
19	---	---	---	†	---	A fair variety for dessert and market uses. Rather liable to mildew.
20	*	*	*	*	*	A good dessert grape. May in some localities do for market.
21	*	*	*	*	*	Still prominent as one of the hardest and most productive for early market.
22	---	---	---	†	---	Another of the Massachusetts hybrids, needing more extensive trial.
23	*	**	*	*	**	Generally esteemed as the finest of our natives. The vine seems to lack constitution.
24	*	*	*	*	---	An old favorite. Still popular where it is sure to ripen.
25	*	*	*	*	*	A good early sort, with tender, breaking pulp, and fair flavor. Requires warm soils.
26	*	*	*	*	---	Valued for hardiness, vigor and productiveness. A good wine grape.
27	---	---	---	†	*	New, hardy, and vigorous. Not fully tested in this State. Three weeks earlier than Concord.
28	---	*	---	*	---	Succeeds at Kalamazoo. Not yet much planted elsewhere.
29	---	†	---	†	---	Seedling of Concord, and said to be as hardy and healthy.
30	---	---	*	†	†	A vigorous and productive vine. But little grown in this State.
31	*	*	*	*	---	Much sought for on account of its color. Very sweet, but too foxy.
32	*	*	*	*	---	Moderately vigorous and productive; like most of the hybrids, liable to mildew.
33	*	**	*	*	**	Vigorous and prolific. Much like Wilder in quality and season.

SECTION IX.—GRAPES.—CONTINUED.—NATIVE.

NUMBER.	NAMES.	DESCRIPTIONS.								USE AND VALUE. Scale 1 to 10.		
		SIZE.		FORM.		Color.	Quality.	Season.	Origin.	Dessert.	Cooking.	Market.
		Bunch.	Berry.	Bunch.	Berry.							
34	Mottled.....	m.	m.	sh. c.	r.	r.	v. g.	m. Sept.	Ohio.	7	----	4
35	Neff (<i>Keuka</i>).....	m.	m.	b.	r.	d. r.	g.	m. Sept.	N. Y.	5	----	6
36	Norton's Virginia.....	m.	s.	sh. c.	r.	d. p.	g.	Oct.	Va.	2	----	4
37	Othello (<i>Arnold's I</i>).....	l.	l.	sh. c.	r.	b.	g.	m. Sept.	h. Ont.	4	----	2
38	Perkins.....	m.	m.	sh. c.	r. o.	r.	g.	e. Sept.	Am.	2	----	2
39	Peter Wylie.....	m.	m. s.	-----	r.	y.	v. g.	m. Sept.	h. S. Car.	8	----	----
40	Rebecca.....	m.	m.	l. c.	r. o.	g. y.	b.	e. Sept.	N. Y.	10	----	1
41	Requa (<i>Rog. 28</i>).....	-----	l.	-----	-----	r.	g.	m. Sept.	h. Mass.	7	----	----
42	Rogers' No. 20.....	-----	-----	-----	-----	r.	-----	-----	h. Mass.	-----	----	----
43	Salem (<i>Rog. 22</i>).....	l.	l.	s. b. c.	r.	d. r.	g.	e. Sept.	h. Mass.	7	----	8
44	Senasqua.....	l.	l.	sh. c.	r.	b.	g.	m. Sept.	h. N. Y.	6	----	4
45	Talman (<i>Champion</i>).....	-----	l.	-----	r.	b.	g.	m. Sept.	Am.	4	----	8
46	Taylor's Bullitt.....	s.	s.	s. sh. c.	r.	g. w. a.	g.	e. Sept.	Ky.	2	----	1
47	Telegraph (<i>Christine</i>).....	l.	l.	c.	r.	b.	g.	m. Sept.	Penn.	4	----	5
48	To Kalon.....	l.	l.	sh.	o. ob.	p. b.	v. g.	e. Sept.	N. Y.	7	----	3
49	Union Village.....	l.	v. l.	sh. c.	r.	b.	g.	m. Sept.	Ohio.	6	----	3
50	Walter.....	m.	m.	sh. c.	r.	l. r.	b.	m. Sept.	N. Y.	6	----	4
51	Wilder (<i>Rog. 4</i>).....	l.	l.	c. sh.	r.	b.	v. g.	m. Sept.	h. Mass.	7	----	8
52	Worden.....	l.	l.	c. sh.	r.	b.	v. g.	m. Sept.	Am.	7	----	7
53	York Madeira.....	m.	m.	sh. c.	r.	b.	g.	Oct.	Penn.	4	----	4

SECTION X.—GRAPES.—FOREIGN.

Foreign grapes are recommended strictly for cultivation under glass; and as, when thus situated, they may considered as, for all practical purposes, independent of climate; and as they are, moreover, thus grown mainly, if not wholly for dessert purposes, we have merely copied the list recommended by the American Pomological Society, with the accompanying descriptions; omitting any farther tabulations.

No.	NAMES.	DESCRIPTIONS.			
		Color.	Flavor.	Season.	Vinery.
1	Barbarossa (<i>Prince Albert, Brigola</i>).....	Black.	Sweet.	Very late.	Hot.
2	Black Champion.....	Black.	Sweet.	Early.	Cold.
3	Black Damascus.....	Black.	Sweet.	Late.	Cold.
4	Black Frontignan.....	Black.	Muscat.	Late.	Cold.
5	Black Hamburg.....	Black.	Sweet.	Medium.	Cold.
6	Black Prince.....	Black.	Sweet.	Medium.	Cold.
7	Black July.....	Black.	Sweet.	Early.	Cold.
8	Bowood Muscat.....	White.	Muscat.	Medium.	Hot.
9	Buckland Sweetwater.....	White.	Sweet.	Medium.	Cold.
10	Calabrian Raisin (<i>Raisin de Calabre</i>).....	White.	Sweet.	Late.	Hot.
11	Cannon Hall Muscat.....	White.	Muscat.	Late.	Hot.
12	Chasselas Musque or Joslin's st. Albans (<i>Muscat blanc Hative</i> , ?).....	White.	Muscat.	Early.	Hot.
13	Duc de Magenta.....	Black.	Sweet.	Early.	Hot.
14	Early Silver Frontignan.....	White.	Muscat.	Early.	Hot.
15	Golden Hamburg (<i>Stockwood Golden Hamburg</i>)..	White.	Sweet.	Late.	Hot.
16	Golden Champion.....	Amber.	Sweet.	Medium.	Hot.

SECTION IX.—GRAPES—CONTINUED.—NATIVE.

NUMBER.	LOCALITY.					REMARKS.
	East.	Center.	South.	Southern Lake Shore.	Northern Lake Shore.	
34	*	---	---	*	---	Vigorous, healthy, productive. A good keeper.
35	---	---	---	†	---	Not yet well tested in Michigan. Foxy.
36	---	---	---	†	---	Mostly valued for wine. Needs a favorable season, or lake protection.
37	*	---	---	*	---	A strong grower and productive. But little grown in this State.
38	---	---	*	*	---	Not largely planted here. Lacks quality. May do for market.
39	---	---	---	†	---	A rapid healthy grower. Fruit fine. A promising South Carolina hybrid.
40	*	*	*	*	---	Wood and foliage feeble. Fruit excellent, when produced.
41	---	---	---	†	---	Promising here, but requires farther trial.
42	---	---	---	†	---	Requires farther trial.
43	*	**	*	*	**	The largest, most attractive, and popular of the Rogers hybrids. Vigorous, productive.
44	*	---	---	*	---	A cotemporary of the Croton. It has attracted much less attention.
45	---	*	---	*	---	Very early. Vigorous and productive. Valuable chiefly as an early market grape. Much confusion as to its identity.
46	*	---	---	*	---	A Kentucky seedling. A strong plant. A pleasant, sweet, light-colored fruit.
47	---	---	---	*	---	Hardy and vigorous. Ripening with Hartford Prolife, and similar in quality.
48	*	---	---	*	*	A fine fruit, but much inclined to rot before maturity.
49	*	*	*	---	*	A vigorous, coarse growing vine. Fruit large but not rich.
50	*	*	*	†	---	A cross of Delaware and Diana. Has not realized the anticipations of planters.
51	*	*	*	*	**	One of the finest and most popular of the Rogers Hybrids. Will do for market.
52	---	*	---	†	---	A week earlier than Concord, and better in quality.
53	---	*	*	---	---	Moderately vigorous and productive. But little known in this State.

SECTION X.—GRAPES—CONTINUED.—FOREIGN.

No.	NAMES.	DESCRIPTIONS.			
		Color.	Flavor.	Season.	Vinery.
17	Grizzly Frontignan (<i>Red Frontignan, Red Constantia</i>)	Red & Yellow.	Muscat.	Medium.	Hot.
18	Gros Colman	Purple.	Sweet.	Late.	Cold.
19	Lady Down's Seedling	Black.	Sweet.	Very late.	Hot.
20	Muscat of Alexandria	White.	Muscat.	Late.	Hot.
21	Muscat Hamburgh	Black.	Muscat.	Medium.	Hot.
22	Mrs. Pince's Black Muscat.	Black.	Muscat.	Late.	Hot.
23	Queen of Nice	White.	---	---	---
24	Red Chasselas (<i>Rose Chasselas</i>)	Red.	Sweet.	Medium.	Hot.
25	Red Lombardy	Red.	Sweet.	Medium.	Hot.
26	Rio Virgin	---	---	---	---
27	Royal Muscadine	White.	Sweet.	Early.	Cold.
28	White Nice	White.	Sweet.	Late.	Hot.
29	West's St. Peter's	Black.	Sweet.	Very late.	Hot.
30	Wilmot's Black Hamburgh (<i>Dutch Hamburgh</i>)	Black.	Sweet.	Medium.	Hot.
31	White Sweetwater (<i>Dutch Sweetwater, &c.</i>)	White.	Sweet.	Early.	Cold.
32	White Frontignan (<i>White, Constantia Muscat blanc</i>)	White.	Muscat.	Medium.	Hot.
33	Zinfandel	Black.	Sweet.	Medium.	Hot.

SECTION XL--NECTARINES.

ABBREVIATIONS FOR THIS SECTION.

Form.		Color.		Flowers.	Glands.
<i>c.</i> compressed.	<i>ov.</i> oval.	<i>c.</i> crimson.	<i>r.</i> red.	<i>l.</i> large.	<i>g.</i> globose.
<i>f.</i> flattened.	<i>r.</i> round.	<i>g.</i> greenish.	<i>y.</i> yellow.	<i>s.</i> small.	<i>r.</i> reniform.
<i>o.</i> oblong.		<i>o.</i> orange.	<i>w.</i> white.		<i>s.</i> serrate.

NUMBER.	NAMES.	DESCRIPTIONS.									USE AND VALUE. Scale 1 to 10.		
		Size.	Form.	Color.	Quality.	Flowers.	Glands.	Adhesion.	Season.	Origin.	Dessert.	Cooking.	Market.
1	Boston	l.	r. ov.	g. r.	v. g.	s.	g.	f.	b. Sept.	Mass.	6	....	....
2	Downton	l.	r. ov.	g. r.	v. g.	s.	r.	f.	e. Aug.	Eur.	8	....	....
3	Early Newington.....	l.	r. ov.	g. r.	v. g.	l.	s.	c.	b. Sept.	Am.	10	....	....
4	Elruge	m.	r. ov.	g. r.	v. g.	s.	r.	f.	b. Sept.	Eur.	9	....	....
5	Red Roman.....	l.	r. f.	g. y. r.	v. g.	l.	r.	c.	m. Sept.	Eur.	8	....	....
6	Stanwick.....	l.	g. w. r.	o. r.	g.	....	r.	....	e. Sept.	Eur.	8	....	....
7	Victoria.....	l.	r. f.	g. y. c.	v. g.	s.	r.	....	b. Sept.	Eur.	9	....	....
8	Violette Hative.....	l.	r. ov.	y. g. r.	v. g.	s.	r.	f.	b. Sept.	Eur.	10	....	....

SECTION XII.--PEACHES.

ABBREVIATIONS FOR THIS SECTION.

Form.		Color.		Flowers.	Glands.
<i>c.</i> compressed.	<i>ov.</i> oval.	<i>b.</i> bright.	<i>p.</i> purple.	<i>l.</i> large.	<i>g.</i> globose.
<i>f.</i> flattened.	<i>r.</i> round.	<i>c.</i> crimson.	<i>r.</i> red.	<i>s.</i> small.	<i>o.</i> obscure.
<i>o.</i> oblong.		<i>d.</i> dark.	<i>w.</i> white.		<i>r.</i> reniform.
		<i>g.</i> green.	<i>y.</i> yellow.		<i>s.</i> serrate.
		<i>o.</i> orange.			

NUMBER.	NAMES.	DESCRIPTIONS.									USE AND VALUE. Scale 1 to 10.		
		Size.	Form.	Color.	Quality.	Flowers.	Glands.	Adhesion.	Season.	Origin.	Dessert.	Cooking.	Market.
1	Alexander.....	m.	r.	g. w. r.	v. g.	l.	g.	c. f.	e. July.	Ill.	9	....	9
2	Amsden's June.....	m.	r.	g. w. r.	v. g.	l.	g.	c. f.	e. July.	Mo.	9	....	9
3	Atlanta	m.	r. c.	w. p. r.	b.	s.	r.	f. c.	e. Sept.	N. Y.	10	....	6
4	Barnard.....	m. l.	r.	y. d. r.	g.	s.	r. o.	f.	b. Sept.	Am.	7	....	9
5	Bergen's Yellow.....	l.	r. f.	o. r.	b.	s.	r.	f.	b. Sept.	Am.	9	....	6
6	Cole's Early Red.....	m.	r.	w. d. r.	v. g.	s.	g.	f.	e. Aug.	Am.	7	....	5
7	Columbia	l.	r. f.	r.	v. g.	s.	r.	f.	m. Sept.	Am.	6	....	4
8	Coolidge's Favorite...	l.	r.	w. c.	v. g.	s.	g.	f.	m. Aug.	Mass.	9	....	7
9	Crawford's Early.....	l.	o.	y. r.	v. g.	s.	g.	f.	e. Aug.	N. J.	9	10	10
10	Crawford's Late.....	v. l.	r.	y. d. r.	v. g.	s.	g.	f.	e. Sept.	N. J.	9	10	9

SECTION XI.—NECTARINES.

The Nectarine is so peculiarly subject to the depredations of the curculio, that it is little grown, except by amateurs, and for dessert uses. Hence experience with it is extremely limited; and for these reasons we only express the comparative values of the varieties in the column for dessert. This fruit, in common with the Almond and the peach, is liable to the killing of the fruit buds in severe winters, except in favorable localities. The starring is given with little regard for this fact.

NUMBER.	LOCALITY.					REMARKS.
	East.	Center.	South.	Southern Lake Shore.	Northern Lake Shore.	
1	---	---	---	*	*	Originated at Boston. Large, showy, not of high quality.
2	---	---	---	*	*	Intermediate between Elruge and Violette Hative.
3	---	---	---	*	*	Like the serrate peaches, the foliage sometimes mildews. Excellent.
4	---	---	---	*	*	An old but highly esteemed variety.
5	---	---	---	*	*	Old, one of the richest and best of the clings. Productive.
6	---	---	---	†	†	A comparatively recent, and very highly praised variety.
7	---	---	---	†	†	A cross of Stanwick upon Violette Hative, by the late Thomas Rivers.
8	---	---	---	*	*	One of the best. Hardy, productive; fruit delicious.

SECTION XII.—PEACHES.

Since the Peach is generally used in its fresh state, or for canning, which is only a mode of preserving it in a nearly fresh condition, we have generally omitted to give values in the column headed "cooking." Throughout Central Michigan, except in favorable localities, occasional severe winters prove fatal to the fruit buds of the Peach, and sometimes even to the trees. These facts cannot be properly expressed in the starring, and hence are disregarded.

NUMBER.	LOCALITY.					REMARKS.
	East.	Center.	South.	Southern Lake Shore.	Northern Lake Shore.	
1	---	*	†	*	*	A partial cling, much like its supposed parent, Hale's Early, and two or three weeks earlier.
2	---	*	†	*	*	Almost exactly like Alexander in tree, fruit, and season of ripening.
3	---	---	---	†	---	Of the finest quality. Not a market fruit.
4	*	**	**	**	*	When thoroughly thinned, the size is large, often overbears, becoming small.
5	*	*	*	*	---	Lacks productiveness.
6	*	*	*	*	---	This has been elbowed aside, the markets craving yellow peaches.
7	---	---	---	*	---	Lacks productiveness, and is not attractive in appearance.
8	*	*	*	*	*	One of the best pale fleshed, early market peaches.
9	**	**	*	**	**	Very popular with both market men and fruit growers. Much used for canning.
10	*	*	*	*	---	Is growing in popularity. Lacks productiveness on light soils, and on young trees.

SECTION XII.—PEACHES—CONTINUED.

NUMBER.	NAMES.	DESCRIPTIONS.								USE AND VALUE. Scale 1 to 10.			
		Size.	Form.	Color.	Quality.	Flavor.	Glands.	Adhesion.	Season.	Origin.	Dessert.	Cooking.	Market.
11	Delavan White.			w. r.		s.	r.	f.		Am.			7
12	Druid Hill.....	l.	r.	g. w. r.	b.	s.	g.	f.	e. Sept.	Md.	10		6
13	Early Admirable.....	m.	r.	y. w. r.	v. g.	l.	g.	f.	e. Aug.	Fr.	8		3
14	Early Beatrice.....	s.	r. c.	w. r.	v. g.	l.	r.	f.	m. Aug.	Eng.	8		7
15	Early Louise.....	m.	r. c.	g. w. p. r.	v. g.	s.	r.	f.	b. Aug.	Eng.	8		7
16	Early Newington Free..	l.	r. c.	y. w. r.	b.	s.	g.	f.	e. Aug.	Am.	10		5
17	Early Rivers.....	l.	r.	y. pink.	b.	l.	r.	f.	m. Aug.	Eng.	9		8
18	Foster.....	l.	r. f.	d. o. r.	v. g.	s.	g.	f.	e. Aug.	Mass.	8		9
19	George the Fourth.....	m.	r.	y. w. d. r.	b.	s.	g. o.	f.	e. Aug.	N. Y.	10		4
20	Grosse Mignonne.....	l.	r. f.	g. y. p. r.	b.	l.	g.	f.	e. Aug.	Eur.	10		6
21	Haines' Early Red.....	m.	r. f.	w. r.	g.	s.	g.	f.	e. Aug.	N. J.	6		7
22	Hale's Early.....	m.	r.	g. r.	v. g.	l.	g.	f. c.	m. Aug.	Ohio.	10		8
23	Heath Cling.....	l.	o. ov.	y. w. r.	v. g.	s.	r.	c.	Oct.	Md.	8		8
24	Hill's Chili.....	m.	ov. c.	y. d. r.	g.	l.	r.	f.	e. Sept.	N. Y.	6		10
25	Jacques Rareripe.....	l.	r. c.	d. y. r.	v. g.	s.	r.	f.	e. Sept.	Mass.	7		10
26	Keyport White.....	l.	r.	w. r.	g.	s.	r.	f.	Oct.	Am.	6		7
27	Large Early York.....	m. l.	r.	w. r.	v. g.	s.	g.	f.	b. Sept.	Am.	8		8
28	Large White Cling.....	l.	r.	w. b. r.	v. g.	s.	g.	c.	m. Sept.	N. Y.	8		9
29	Late Admirable.....	v. l.	r. ov.	y. g. r.	b.	s.	g.	f.	m. Sept.	Fr.	10		8
30	Late Red Rareripe.....	l.	r. ov.	y. r.	b.	s.	g.	f.	m. Sept.	Am.	10		6
31	Lemon Cling.....	l.	o.	y. d. r.	v. g.	s.	r.	c.	e. Sept.	Am.	6		9
32	Macon (<i>Local</i>).....							f.		Mich.	8		
33	Morris' White Rareripe.	m.	ov.	g. w. p.	v. g.	s.	r.	f.	e. Sept.	Am.	7	10	8
34	Mountain Rose.....	l.	r. c.	w. r.	v. g.	s.	g.	f.	b. Sept.	N. J.	7		9
35	Oldmixon Cling.....	l.	r. ov.	y. w. r.	b.	s.	g.	c.	m. Sept.	Am.	8	9	7
36	Oldmixon Free.....	l.	r. ov.	y. w. p.	v. g.	s.	g.	f.	m. Sept.	Am.	8		10
37	Red Cheek Melocoton...	l.	r. ov.	y. b. r.	g.	s.	g.	f.	m. Sept.	Am.	7		8
38	Richmond.....	m. l.	r. c.	y. d. r.	v. g.	s.	r.	f.	b. Sept.	N. Y.	8		9
39	Scott's Nonpareil.....	l.	r. o.	y. r.	v. g.	s.	g.	f.	m. Sept.	Am.	8		8
40	Smock Free.....	l.	ov. c.	l. y. d. r.	g.	s.	r.	f.	Oct.	N. J.	6		10
41	Snow.....	m.	r.	w.	g.	s.	r.	f.	m. Sept.	Am.	5		5
42	Snow's Orange.....	m. l.	r.	b. y. r.	v. g.	s.	r.	f.	b. Sept.	Mich.	6		9
43	Stump the World.....	v. l.	r. o.	w. b. r.	v. g.	s.	g.	f.	e. Sept.	N. J.	8		9
44	Susquehanna.....	l.	r.	y. r.	v. g.	s.	g.	f.	m. Sept.	Penn.	7		5
45	Tippecanoe.....	v. l.	r. c.	y. r.	v. g.	s.	r.	c.	e. Sept.	Penn.	9		9
46	Troth's Early Red.....	m.	r.	w. b. r.	g.	s.	g.	f.	e. Aug.	N. J.	5		8

SECTION XII.—PEACHES—CONTINUED.

NUMBER.	LOCALITY.					REMARKS.
	East.	Center.	South.	Southern Lake Shore.	Northern Lake Shore.	
11	---	---	---	*	---	Is liked by some planters, but is not generally known or valued.
12	*	---	*	*	---	An excellent late pale fleshed peach that should be better known.
13	*	---	---	*	---	Mainly valuable for the private garden.
14	---	---	*	†	*	As far as tried, it is too small for the market. Rich, beautiful.
15	---	---	---	†	*	Ripens in advance of Hale's Early or Beatrice. Very high quality.
16	---	---	*	†	---	Sometimes clings slightly. A fine amateur peach.
17	---	---	---	†	*	An excellent, very early sort; lacks color.
18	---	*	---	*	*	A promising market peach, but almost identical in season with Early Crawford.
19	*	*	*	*	*	One of the best for home use. Too delicate and tender for market.
20	*	†	*	*	---	The true variety is one of the most delicious of peaches.
21	*	*	*	*	*	Hardy and productive. Well adapted to the market.
22	*	**	*	**	**	A fine peach and vigorous tree. Sometimes rots before maturity.
23	*	*	*	*	---	One of the finest clings, but needs a long season in this latitude.
24	*	*	*	**	---	Hardy. A good bearer, and a profitable late variety. Lacks quality.
25	*	*	*	**	---	Profitable, but not of high quality.
26	*	*	*	*	---	Does not mature perfectly in unfavorable seasons.
27	*	*	*	*	*	Has not become generally popular at the northwest.
28	*	*	*	*	---	A large and showy cling of good quality.
29	*	---	---	---	---	One of the finest for home use as a dessert peach.
30	*	---	*	---	---	Highly valued as a dessert peach. Comes before the preceding.
31	*	*	*	*	---	The largest and best of the yellow-fleshed clings.
32	---	---	*	---	---	Valued in northeastern Lenawee.
33	*	*	*	*	---	Valued for preserving and canning on account of its color.
34	†	*	†	†	**	This is attracting much attention as a market variety.
35	---	*	*	---	---	Where a cling is desired.
36	*	*	*	**	**	A very old variety, which still holds a high position as a market peach.
37	*	*	*	*	---	An old sort. The parent of Crawford's Early and Late.
38	---	---	---	†	---	A new and promising variety. A few days later than Early Crawford, and less acid.
39	---	---	---	*	---	A variety originating from Old Red Cheek, and promising to be superior.
40	*	*	*	**	---	One of the latest profitable market peaches in Southern Michigan.
41	*	*	*	*	---	Young growth, yellowish green. Fruit, clear yellowish white; flesh, clear white.
42	*	*	*	**	**	Similar to Barnard; brighter in color, and slightly later.
43	*	*	*	*	---	A large and beautiful market peach of fair quality.
44	*	*	*	*	---	A large, beautiful and fine, rather late peach. Said to lack productiveness.
45	*	*	*	*	---	One of the finest of late yellow clings, for Southern Michigan.
46	*	*	*	*	---	An early and productive white fleshed peach of only medium quality.

SECTION XII.—PEACHES—CONTINUED.

NUMBER.	NAMES.	DESCRIPTIONS.									USE AND VALUE. Scale 1 to 10.		
		Size.	Form.	Color.	Quality.	Flowers.	Glands.	Adhesion.	Season.	Origin.	Dessert.	Cooking.	Market.
47	Van Zant's Superb	m.	ov.	w. r.	b.	s.	r.	f.	e. Aug.	N. Y.	10	---	5
48	White Imperial.....	m.l.	r. c. f.	y. w. b. r.	v. g.	s.	g.	f.	b. Sept.	N. Y.	7	---	9
49	Windoes.....	---	---	---	---	s.	r.	f.	m. Sept.	Mich.	---	---	---
50	Yellow Alberge.....	m.	r.	y. p. r.	g.	s.	g.	f.	e. Aug.	Fr.	6	---	8
51	Yellow Rareripe.....	l.	r.	o. y. r.	v. g.	s.	g.	f.	b. Sept.	Am.	---	---	---

SECTION XIII.—PEARS.

ABBREVIATIONS FOR THIS SECTION.

Form.

<i>a. acute.</i>	<i>o. oblong.</i>	<i>p. pyriform.</i>
<i>d. depressed.</i>	<i>ob. obtuse.</i>	<i>r. roundish.</i>
<i>e. elongated.</i>	<i>obo. obovate.</i>	<i>t. turbinate.</i>
	<i>ov. oval or ovate.</i>	

NUMBER.	NAMES.	DESCRIPTIONS.							USE AND VALUE. Scale 1 to 10.		
		Size.	Form.	Color.	Quality.	Season.	Original.		Dessert.	Cooking.	Market.
1	Ananas D' Ete.....	l.	p. ob.	y. b. ru.	v. g.	Sept. Oct.	Hol.		10	5	4
2	Bartlett.....	l.	o. ob. p.	y. ru. r.	v. g.	Sept.	Eng.		8	8	10
3	Belle Epine Dumas.....	m.	obo. ob. p.	g. y. ru. b.	v. g.	Nov. Dec.	-----		7	6	5
4	Beurre Bose	l.	p.	d. y. ru.	b.	Oct.	Bel.		9	7	8
5	Beurre Clairgeau.....	l.	p.	y. o. c. ru.	g.	Oct.	Fr.		6	7	9
6	Beurre D'Anjou	l.	ob. p.	g. ru. c. b.	v. g.	Nov.	Fr.		10	9	10
7	Beurre de Brignais..... (<i>Des Nonnes</i>)	m.	r. ob.	g.	v. g.	Sept.	-----		6	6	6
8	Beurre Diel.....	l.	obo. ob. p.	y. o. ru.	v. g.	Sept. Dec.	Bel.		6	8	7
9	Beurre Giffard.....	m.	p.	g. y. r.	v. g.	e. Aug.	Fr.		9	6	6
	Beurre Gris D'Iliver Nouveau	m.	r. ob. p.	y. ru.	v. g.	Nov. Jan.	Eur.		6	8	6
	Beurre Goubalt.....	s.	obo.	g. y.	g.	Sept.	Fr.		4	6	3
12	Beurre Hardy.....	l.	obo. ob. p.	g. ru. b.	v. g.	Sept. Oct.	-----		7	7	8
13	Beurre Langelier.....	m.	obo. ob. p.	y. c. ru.	v. g.	Nov. Jan.	Eng.		6	8	5
14	Beurre Superfine.....	m.	r. p.	y. c. ru.	v. g.	Oct.	Fr.		7	8	8
15	Bloodgood.....	m.	t. obo.	y. ru.	v. g.	Aug.	N. Y.		9	6	4
16	Brandywine.....	m.	e. ob. p.	y. g. ru.	v. g.	Sept.	Penn.		7	7	5

SECTION XII.—PEACHES—CONTINUED.

NUMBER.	LOCALITY.					REMARKS.
	East.	Center.	South.	Southern Lake Shore,	Northern Lake Shore,	
47	*	*	*	*	---	Skin very smooth and beautiful. A fine amateur peach.
48	*	*	*	*	*	Valued for drying, canning, and preserving.
49	---	---	---	*	---	A variety of only local popularity.
50	*	*	*	*	*	This is one of the earliest of the yellow-fleshed peaches.
51	*	*	*	*	*	The genuine is a fine very early peach. The one grown here is probably spurious.

SECTION XIII.—PEARS.

ABBREVIATIONS FOR THIS SECTION.

Color.

b. brown.
c. crimson.
d. dark.

g. green.
l. light.
o. orange.

r. red.
ru. russet.
y. yellow.

NUMBER.	LOCALITY.					REMARKS.
	East.	Center.	South.	Southern Lake Shore,	Northern Lake Shore,	
1	*	*	*	*	*	A fine amateur variety.
2	**	**	**	**	**	The leading market sort. Too musky to suit some tastes.
3	*	---	---	*	---	Tree vigorous; fruit lacks attractiveness and quality.
4	*	*	*	*	*	Fruit fair and even in size. Will bear to be planted for market.
5	*	*	*	*	---	Soon becomes dry and insipid, when ripened. A showy market pear.
6	**	**	**	**	*	One of the best late autumn pears, whether for market or home use.
7	*	---	---	---	---	Not much disseminated. Lacks attractiveness.
8	*	*	*	*	*	Fruit apt to be astringent on young trees. Should be house-ripened.
9	*	*	*	*	---	Fruit requires to be gathered before maturity—decays rapidly.
10	*	---	---	---	---	A promising winter pear.
11	---	*	---	---	---	Not much disseminated. Not of high quality.
12	*	---	---	*	---	Not as well known as it should be.
13	*	---	---	---	---	Like winter pears generally, this has not been largely planted.
14	*	*	*	*	---	A fine pear. Sometimes a little too acid. Productive.
15	*	*	*	*	---	No garden should be without this. Fruit best when house-ripened.
16	*	---	†	---	---	But little disseminated.

SECTION XIII.—PEARS—CONTINUED.

NUMBER.	NAMES.	DESCRIPTIONS.						USE AND VALUE. Scale 1 to 10.		
		Size.	Form.	Color.	Quality.	Season.	Origin.	Dessert.	Cooking.	Market.
17	Buffum.....	m.	ob. obo.	d. y. r.	v. g.	Sept.	R. I.	6	7	8
18	Clapp's Favorite.....	l.	obo. ob. p.	l. c. y.	v. g.	Sept.	Mass.	8	8	9
19	Columbia.....	l.	o. obo.	g. y. o.	g.	Nov. Jan.	N. Y.	6	8	6
20	Dana's Hovey.....	s.	obo. ob. p.	g. y. ru.	b.	Nov. Jan.	Mass.	9	5	4
21	Dearborn's Seedling.....	s.	r. p.	l. y.	v. g.	Aug.	Mass.	7	5	2
22	Dix.....	l.	l. p.	d. y. ru.	v. g.	Oct. Nov.	Mass.	8	6	8
23	Doctor Reeder.....	s.m.	r. ob. p.	y. ru.	b.	Nov.	N. Y.	8	6	4
24	Doyenne Boussock.....	l.	obo. p.	d. y. ru.	v. g.	Sept. Oct.	Bel.	7	7	8
25	Doyenne D'Ete.....	s.	r. obo. p.	y. r.	v. g.	July.	Bel.	9	5	7
26	Doyenne du Comice.....	l.	r. ob. p.	y. c. ru.	b.	Oct. Nov.	Fr.	9	7	7
27	Doyenne Gray.....	m.	o. obo.	l. ru.	b.	Oct.	Eur.	10	8	8
28	Duchesse D'Angouleme.....	v.l.	o. obo.	g. y. ru.	v. g.	Oct.	Fr.	7	9	10
29	Easter Beurre.....	l.	r. obo. ob.	y. g. ru.	v. g.	Jan. Mar.	Eur.	6	8	3
30	Emile D'Heyst.....	l.	o. obo. p.	y. o. ru.	b.	Nov. Dec.	Bel.	10	8	8
31	Flemish Beauty.....	l.	obo. ob. p.	y. ru. r. b.	v. g.	Sept.	Bel.	7	7	7
32	Fondante D'Automne.....	m.	obo. ob. p.	y. g. ru.	b.	Sept.	Fr.	10	7	8
33	Glout Morcean.....	l.	obo. ob. p.	g. y. b.	g.	Dec.	Fr.	7	7	5
34	Howell.....	l.	r. p.	l. y. ru.	v. g.	Oct.	Conn.	8	7	9
35	Josephine de Malines.....	m.	r. ob. p.	g. y. ru.	v. g.	Jan. Feb.	Bel.	8	8	6
36	Kirtland.....	m.	ob. obo. p.	y. l. ru.	v. g.	Sept.	Ohio.	8	5	4
37	Lawrence.....	m.	obo. ob. p.	y. ru.	v. g.	Dec.	N. Y.	8	8	8
38	Louise Bonne de Jersey.....	l.	o. p.	g. b. r.	v. g.	Sept. Oct.	Fr.	7	9	9
39	Madelaine.....	m.	obo. p.	y. g.	v. g.	July.	Fr.	8	8	7
40	Manning's Elizabeth.....	s.	obo. op. p.	l. y. r.	v. g.	Aug. Sept.	Bel.	9	7	6
41	Mount Vernon.....	m.l.	r. ob. p.	ru. y. b. r.	v. g.	Nov. Dec.	Mass.	8	8	6
42	Napoleon.....	l.	ob. p.	y. g.	g.	Sept.	Bel.	5	6	6
43	Onondaga.....	l.	obo. ob. p.	y. ru.	v. g.	Oct. Nov.	Conn.	7	8	9
44	Osband's Summer.....	s.	r. obo. p.	y. r. ru.	v. g.	Aug.	N. Y.	7	7	8
45	Oswego Beurre.....	m.	ob. obo.	y. g. ru.	v. g.	Oct. Nov.	N. Y.	8	7	4
46	Paradise D'Automne.....	l.	o. obo. o. p.	y. ru.	v. g.	Sept. Oct.	Bel.	8	6	4
47	Pound.....	l.	p.	y. g. b.	g.	Dec. Mar.	Eur.?	1	10	7
48	Rostiezer.....	s.	obo. o. p.	y. g. r. b.	b.	Aug.	Eur.	9	5	6
49	Seckel.....	s.	obo.	y. b. r. ru.	b.	Oct.	Penn.	10	---	7
50	Sheldon.....	m.	r. ob. obo.	g. y. ru. c.	v. g.	Oct.	N. Y.	8	6	10
51	Sterling.....	m.	r. ov. p.	y. ru. c.	v. g.	Sept.	N. Y.	7	5	9
52	Stevens' Genesee.....	l.	r.	y.	v. g.	Sept.	N. Y.	9	6	6

SECTION XIII.—PEARS—CONTINUED.

NUMBER.	LOCALITY.					REMARKS.
	East.	Center.	South.	Southern Lake Shore.	Northern Lake Shore.	
17	*	*	*	*	*	Popular on account of the health, vigor, and productiveness of the tree. Market.
18	*	**	*	*	**	A strong grower. Fine, large fruit. Inclined to rot at the core. Promising for market.
19	*	---	---	---	---	Liable to drop or be blown from the tree prematurely.
20	*	---	---	*	---	One of the few winter pears of high quality.
21	*	*	*	*	*	Well known and esteemed, but too small to become very popular.
22	*	*	*	*	---	Too tardy bearer.
23	---	---	---	---	---	A New York seedling from Winter Nelis.
24	*	*	*	*	---	Popular as a market pear. Also a good amateur fruit.
25	*	*	*	*	*	The best and most satisfactory very early pear.
26	*	---	---	†	---	New; gives promise of value.
27	*	*	*	---	---	Excellent. Should be more widely planted.
28	*	*	*	*	*	When neglected, proves unproductive. Profitable under good treatment, and on dwarf stocks. At north loses quality.
29	*	*	*	*	*	In a warm exposure and favorable season, this will be found satisfactory. Better south.
30	*	---	---	---	---	Little disseminated. A fruit of high promise.
31	**	**	**	†	**	Vigorous tree. Large, showy fruit, which decays soon at the center. Drops and sometimes scabs.
32	*	*	*	*	*	An excellent and profitable old variety.
33	*	*	*	*	---	On old trees, when well ripened, this is an excellent pear.
34	*	*	*	*	*	Quite freely planted and generally esteemed.
35	*	*	*	*	*	Not as freely planted as it should be.
36	*	*	*	*	---	Very fine, but comes in the height of the fall-fruit season.
37	*	*	*	*	*	Tree healthy and vigorous. Should be grown on dry, warm soils.
38	*	*	*	*	**	A good market pear. Should always be grown as a dwarf.
39	*	*	*	*	---	The earliest pear of good quality. Sometimes slightly astringent.
40	*	*	*	*	---	One of the most desirable amateur pears of its season.
41	---	---	---	†	*	A promising late autumn and early winter pear. Bears young.
42	*	*	*	*	---	An early and abundant bearer. Lacks quality.
43	*	*	*	*	*	A good constant bearer of large, showy fruit of fair quality in most seasons.
44	*	*	*	*	---	Tree vigorous; productive. Fruit sufficiently good for the market.
45	*	*	*	*	---	High vinous flavor; rich. Becomes productive with high culture.
46	*	---	---	---	---	Fruit somewhat like Beurre Bosc, but more variable.
47	*	*	*	*	---	Chiefly valued for the kitchen. Trees strong, healthy.
48	*	*	*	*	---	Tree vigorous and productive. Fruit excellent, but unattractive in appearance.
49	*	*	*	*	**	The standard of high quality among pears. Tree forms a beautiful pyramid. Profitable for market when known.
50	*	*	*	*	**	A hardy, productive tree; and a good fruit for general purposes; not attractive.
51	*	*	*	*	†	Both tree and fruit well adapted for the market.
52	*	*	*	*	*	An excellent and fine looking pear, but soon decays at the core.

SECTION XIII.—PEARS—CONTINUED.

NUMBER.	NAMES.	DESCRIPTIONS.						USE AND VALUE. Scale 1 to 10.		
		Size.	Form.	Color.	Quality.	Season.	Origin.	Dessert.	Cooking.	Market.
53	St. Ghislain.....	m.	p.	y.	g.	Sept. Oct.	Bel.	7	6	4
54	Tyson.....	m.s.	a. p.	y. ru. c.	b.	Aug. Sept.	Penn.	9	6	7
55	Urbaniste.....	m.l.	obo. p.	y. ru.	v. g.	Oct. Nov.	Fl.	9	7	6
56	Vicar of Winkfield.....	l.	e. p.	y. b.	g.	Nov. Jan.	Fr.	2	8	6
57	Washington.....	m.	o. obo.	y. r.	v. g.	Sept.	Del.	9	6	4
58	White Doyenne.....	m.l.	obo.	y. r.	b.	Oct.	Fr.	10	7	8
59	Windsor.....	l.	p.	y. g.	g.	Aug.	Eur.	1	5	6
60	Winter Nelis.....	m.	r. obo.	y. g. ru.	b.	Dec. Jan.	Fl.	9	7	7

SECTION XIV.—PLUMS.

In the grading and starrng of plums no reference is had to the prevalence of the curculio in the district.

ABBREVIATIONS FOR THIS SECTION.

Form.

d. depressed. *n.* necked. *obo.* obovate.
f. flattened. *o.* oblong. *ov.* oval.
l. long. *ob.* oblate. *r.* roundish.

NUMBER.	NAMES.	DESCRIPTIONS.							USE AND VALUE. Scale 1 to 10.		
		Size.	Form.	Color.	Quality.	Adhesion.	Season.	Origin.	Dessert.	Cooking.	Market.
1	Bavay's Green Gage.....	l.	r. d.	g. y.	b.	f.	Oct.	Bel.	9	9	9
2	Bleeker's Gage.....	m.	r. ov.	y.	v. g.	f. c.	e. Aug.	N. Y.	8	7	8
3	Bradshaw.....	l.	ov. obo. w.	r. p.	g.	c. f.	e. Aug.	Am.	7	10	10
4	Canada Egg (<i>local name</i>).....	l.	-----	-----	g.	c.	Sept.	Ont. ?	7	7	8
5	Coe's Golden Drop.....	l.	ov.	y. r.	v. g.	c.	e. Sept.	Eng.	8	6	9
6	Columbia.....	l.	r.	br. p.	g.	f.	b. Sept.	N. Y.	6	-----	5
7	Copper.....	m.s.	ov. w.	c.	g.	c.	e. Sept.	Eur.	4	8	9
8	Damson.....	s.	ov.	p.	g.	f. c.	Sept.	Am.	3	10	8
9	Dorr's Favorite (<i>local name</i>).....	v. l.	obo.	p.	g.	c.	Sept.	Am.	6	7	8
10	Duane's Purple.....	v. l.	o. ov.	r. p.	g.	f. c.	Aug.	N. Y.	7	4	5

SECTION XIII.—PEARS—CONTINUED.

NUMBER.	LOCALITY.					REMARKS.
	East.	Center.	South.	Southern Lake Shore.	Northern Lake Shore.	
53	*	---	---	---	---	An old variety; now to a great extent superseded.
54	*	*	*	*	---	A beautiful tree. Fruit grown to some extent for the market.
55	*	*	*	*	---	Too tardy a bearer. Is being abandoned; probably for this reason.
56	*	*	*	*	*	Tree very vigorous and productive. Its greatest recommendation for this climate.
57	*	**	*	*	---	This pear should be planted in every garden.
58	*	*	*	*	*	This old favorite is generally successful in this State.
59	*	*	*	*	*	The vigor and beauty of the tree, and the size of the fruit, are its sole recommendations.
60	*	*	*	*	---	The fruit is scarcely inferior to the Seckel. The tree must not be allowed to overbear.

SECTION XIV.—PLUMS.

ABBREVIATIONS FOR THIS SECTION.

Color.

b. blue. *p. purple.*
br. brownish. *r. red.*
c. copper. *y. yellow.*
g. green.

NUMBER.	LOCALITY.					REMARKS.
	East.	Center.	South.	Southern Lake Shore.	Northern Lake Shore.	
1	*	*	*	*	*	Nearly or quite as fine as Green Gage. Tree a better grower.
2	*	*	*	*	*	Hardy. A good regular bearer. Shoots downy.
3	*	**	*	*	*	Grows and bears well. A superior market variety.
4	---	---	---	*	*	Probably an unrecognized old variety.
5	**	**	**	**	*	Beautiful. Excellent. Perhaps may not ripen well at the extreme north.
6	*	---	---	---	---	Subject to rot. Tree vigorous and productive.
7	---	---	---	†	---	Valued for market, and cooking.
8	*	*	*	*	*	A slow grower. Productive. Valued for preserves.
9	---	---	---	---	*	Popular in Oceana county. Probably an unrecognized old variety.
10	*	*	*	*	*	Too soft and uneven in size for market.

SECTION XIV.—PLUMS—CONTINUED.

NUMBER.	NAMES.	DESCRIPTIONS							USE AND VALUE. Scale 1 to 10.		
		Size.	Form.	Color.	Quality.	Adhesion.	Season.	Origin.	Dessert.	Cooking.	Market.
11	General Hand.....	v. l.	r. ov.	g. y.	g.	f.	Sept.	Penn. ?	6	7	7
12	German Prune.....	l.	l. ov.	p.	g.	f.	Sept.	Eur.	6	8	8
13	Green Gage.....	s.	r.	g. y. r.	b.	f.	e. Aug.	Eur.	10	8	3
14	Huling's Superb.....	v. l.	r. ov.	g. y.	g.	e.	e. Aug.	Penn.	8	7	5
15	Imperial Gage.....	l.	ov.	g. y.	b.	f.	Sept.	N. Y.	9	9	9
16	Imperial Blue (<i>local</i>).....			b.			Sept.	Mich. ?			
17	Italian Prune.....	m.	ov.	b.	g.	f.	Oct.	Eur.	6	8	8
18	Jefferson.....	l.	ov.	y. p. r.	b.	f.	Sept.	N. Y.	10	9	9
19	Kirke's.....	m.	r. o.	p.	g.	f.	Sept.	Eur.			
20	Lombard.....	m.	r. ov. f.	r. p.	g.	e.	b. Sept.	N. Y.	6	10	10
21	McLaughlin.....	l.	r. ob.	y. r.	b.	e.	e. Aug.	Me.	10	6	7
22	Monroe.....	m. l.	ov.	g. y.	g.		Sept.	N. Y.	6	7	9
23	Orleans.....	m.	r.	r. p.	g.	f.	e. Aug.	Eur.			
24	Peach Plum.....	v. l.	r. f.	b. r.	g.	f.	b. Aug.	Eur.	6	10	10
25	Pond's Seedling (<i>Fonthill</i>).....	v. l.	ov. n.	y. r.	g.		e. Sept.	Eng.	6	7	8
26	Prince Englebert.....	l.	ob. ov.	p. br.	v. g.	f.	b. Sept.	Bel.	8		10
27	Prince's Yellow Gage.....	m. l.	ov.	y.	v. g.	f.	Aug.	N. Y.	8	8	9
28	Quackenboss.....	l.	o. r.	p.	g.	f. e.	Sept.	N. Y.	6	7	9
29	Red Magnum Bonum.....	l.	ov.	r.	g.	f.	Sept.	Eur.	5	7	7
30	Smith's Orleans.....	l.	ov.	r. p.	v. g.	e.	e. Aug.	N. Y.	8	8	8
31	Washington.....	v. l.	r. ov.	g. y. e.	v. g.	f.	e. Aug.	N. Y.	8	10	7
32	Yellow Egg.....	v. l.	ov.	y.	g.	e.	e. Aug.		6	8	7

SECTION XV.—QUINCES.

ABBREVIATIONS FOR THIS SECTION.

Form.

*ob. obtuse.**r. round.**p. pyriform.*

NUMBER.	NAMES.	DESCRIPTIONS.							USE AND VALUE. Scale 1 to 10.		
		Size.	Form.	Color.	Quality.	Season.	Origin.		Dessert.	Cooking.	Market.
1	Angers.....	v. l.	ob p.	y.	v. g.	Oct. Nov.	Eur.			9	10
2	Apple Shaped.....	l.	r.	y.	v. g.	Oct. Nov.	Eur.			10	10
3	Portugal.....	v. l.	ob. p.	y.	b.	Oct.	Eur.			10	5
4	Rea's Seedling.....	l.	r. ob. p.	y.		Oct.	N. Y.			10	8

SECTION XIV.—PLUMS—CONTINUED.

NUMBER.	LOCALITY.					REMARKS.
	East.	Center.	South.	Southern Lake Shore.	Northern Lake Shore.	
11	---	---	---	†	*	Promises well for market.
12	*	*	*	*	*	Valued for drying and preserving.
13	*	*	*	*	*	The standard of quality among plums. Tree a slow grower.
14	*	*	---	---	*	Tree very vigorous, upright, moderate bearer.
15	*	*	*	*	*	Productive excellent, shoots dark, downy, vigorous.
16	---	---	*	---	---	Introduced into Lenawee Co. by Israel Pennington, who prizes it highly.
17	---	---	---	†	---	Tree vigorous, spreading, branches smooth.
18	*	*	*	*	**	A slow grower, good bearer, very profitable at the north.
19	---	---	---	---	---	Branches smooth. The stone is broad and flat.
20	**	**	**	**	**	Tree vigorous, hardy, and productive. The leading market variety.
21	*	*	*	*	*	Tree not satisfactory at St. Joseph.
22	*	*	*	*	---	Nearly or quite equal to green gage. Hardy, vigorous, productive.
23	---	---	---	---	---	Tree very vigorous and productive.
24	---	---	---	*	*	Vigorous. Branches gray and very downy.
25	---	---	---	†	*	Tree upright, vigorous. A moderate bearer.
26	*	---	---	*	*	Productive, vigorous. Branches smooth, grayish.
27	*	*	*	*	*	Tree vigorous; a great bearer; valuable for market.
28	*	*	*	*	---	An old favorite. Hardy, productive.
29	*	*	*	*	*	A rapid, upright grower; productive.
30	*	*	*	*	*	The genuine has slender, smooth shoots.
31	*	*	*	*	**	One of the most vigorous, shoots glossy, reddish purple, very productive.
32	*	*	*	*	**	One of the largest and most beautiful, but inclined to rot on the tree.
						Free from rot at the north.
						A fine market variety, but rots in some seasons at the south.

SECTION XV.—QUINCES.

ABBREVIATIONS FOR THIS SECTION.

Color.

y. yellow.

NUMBER.	LOCALITY.					REMARKS.
	East.	Center.	South.	Southern Lake Shore.	Northern Lake Shore.	
1	*	---	---	---	---	A longer keeper than the Apple, but not equal in quality. Very unproductive at Traverse (Parneclee).
2	**	**	*	**	*	Well known and universally approved.
3	*	---	---	---	---	Tree a strong grower, but unproductive. Quality superior.
4	†	---	---	†	---	Larger than the Apple, and equally good. Tree thrifty.

SECTION XVI.—RASPBERRIES.—*RUBUS OCCIDENTALIS* AND SUPPOSED HYBRIDS;
ROOTING FROM THE TIPS OF THE BRANCHES.

ABBREVIATIONS FOR THIS SECTION.

Form.

c. conical.*ob.* obtuse.*r.* roundish.

NUMBER.	NAMES.	DESCRIPTIONS.						USE AND VALUE. Scale 1 to 10.		
		Size.	Form.	Color.	Quality.	Season.	Origin.	Dessert.	Cooking.	Market.
1	American Black.....	s.	r.	b.	g.	m. July.	N.Y.	5	7	5
2	American White.....	s.	r.	y.w.	g.	m. July.	Am.	5	6	4
3	Canada Black Cap.....	s.	r.	b.	g.	m. July.	Can.	5	6	5
4	Davison's Thornless.....	s.	r.	b.	g.	b. July.	N.Y.	6	7	6
5	Doolittle.....	m.	r.	b.	v. g.	m. July.	N.Y.	6	8	8
6	Ellisdale.....	l.	r. ob.	p.	v. g.	m. July.	Iowa.	5	7	3
7	Ganargua.....	v. l.	r. ob.	p.	v. g.	July.	N.Y.	8	9	5
8	Golden Thornless.....	m.	r.	y.	g.	July.	Am.	6	6	4
9	Gregg.....	v. l.	r.	b.	g.	July.	Ohio.	6	9	9
10	Lum's Everbearing.....	m.	r.	b.	g.	July.	Ohio.	6	7	3
11	McCormick (<i>Mammoth Cluster</i>).....	m. l.	ob. c.	b.	v. g.	July, Aug.	Am.	6	9	9
12	Miami Black.....	m.	r.	b. p.	g.	July.	Am.	7	10	7
13	Norwood.....	m.	r.	p.	g.	July.	Mass.	7	9	---
14	Ontario.....	m.	r.	b.	v. g.	July.	N.Y.	6	6	8
15	Purple Cane.....	m.	r.	p.	g.	July.	Am.	7	9	4
16	Seneca Black Cap.....	m. l.	r.	p. b.	g.	July, Aug.	N.Y.	6	7	6

SECTION XVII.—RASPBERRIES.—*RUBUS IDEUS* AND *STRIGOSUS*, INCREASING
BY SUCKERS OR SPROUTS.

ABBREVIATIONS FOR THIS SECTION.

Form.

c. conical.*ob.* obtuse.*r.* roundish.

Color.

b. bright.*c.* crimson.*o.* orange.

NUMBER.	NAMES.	DESCRIPTIONS.						USE AND VALUE. Scale 1 to 10.		
		Size.	Form.	Color.	Quality.	Season.	Origin.	Dessert.	Cooking.	Market.
1	Arnold's Red.....	l.	r. ob.	r.	v. g.	July, Sept.	Ont.	6	---	2
2	Bristol.....	m.	r.	r.	v. g.	July.	Am.	6	---	---
3	Clarke.....	l.	c.	b. c.	v. g.	c. July.	Con.	8	8	7
4	Cuthbert (<i>Queen of the market</i>).....	l.	r. c.	b. c.	b.	July.	N.Y.	10	---	9
5	Delaware.....	l.	r.	b. c.	g.	July.	Del.	8	9	9

SECTION XVI.—RASPBERRIES.—*RUBUS OCCIDENTALIS* AND SUPPOSED HYBRIDS;
ROOTING FROM THE TIPS OF THE BRANCHES.

ABBREVIATIONS FOR THIS SECTION.

Color.

b. black. *p. purple.* *r. red.* *y. yellow.*

NUMBER.	LOCALITY.					REMARKS.
	East.	Center.	South.	Southern Lake Shore.	Northern Lake Shore.	
1	*	*	*	*	*	Desirable when great hardness is required.
2	*	*	*	*	*	Fancied for its color, which, however, changes to a dirty brown when overripe.
3	---	---	---	*	---	Cannot compete with several other black caps.
4	*	*	*	*	*	Earlier and sweeter than most black caps. Canes thornless
5	*	*	*	*	*	Ripens between Thornless and McCormick. Profitable.
6	*	---	---	*	---	Does not sucker. Much like Purple Cane.
7	*	---	*	*	---	Does not sucker. Supposed hybrid between <i>Occidentalis</i> and <i>Strigosus</i> .
8	*	*	*	*	---	Thick bloom. Canes have but few spines. Very productive.
9	---	†	---	†	---	Claimed to be larger and better than McCormick.
10	*	*	*	*	---	Bears its later specimens on canes of the current year.
11	*	*	*	*	*	Plant very vigorous with stout thorns. Very productive.
12	*	*	**	*	*	The most juicy and luscious of the black caps.
13	†	---	---	†	---	Appears vigorous and hardy.
14	---	---	---	*	---	Fruit with a thick bluish bloom. Not very acid. Very firm.
15	*	*	*	*	*	A very old sort. Now but little grown.
16	---	---	---	†	*	With light bloom, juicy, sweet. Said to be vigorous and productive.

SECTION XVII.—RASPBERRIES.—*RUBUS IDEUS* AND *STRIGOSUS*, INCREASING
BY SUCKERS OR SPROUTS.

ABBREVIATIONS FOR THIS SECTION.

Color.

p. purplish. *r. red.* *sc. scarlet.*

NUMBER.	LOCALITY.					REMARKS.
	East.	Center.	South.	Southern Lake Shore.	Northern Lake Shore.	
1	---	---	---	†	†	One of Chas. Arnold's hybrids.
2	---	---	---	†	†	Not yet sufficiently proved.
3	*	*	*	*	*	Best early red, but does not set well. Not fully hardy away from lake protection.
4	---	*	---	---	*	Very firm, productive, and hardy.
5	---	---	---	†	†	Said to be very hardy. Beautiful, excellent. Said to be productive. Firm.

SECTION XVII.—RASPBERRIES—CONTINUED.

NUMBER.	NAMES.	DESCRIPTIONS.						USE AND VALUE. Scale 1 to 10.		
		Size.	Form.	Color.	Quality.	Season.	Origin.	Dessert.	Cooking.	Market.
6	Early Andrews.....	m.	r.	r.	-----	July.	Am.	-----	-----	-----
7	Fastolf.....	l.	r. c.	p. r.	v. g.	July.	Eng.	7	8	7
8	Franconia.....	l.	ob. c.	p. r.	v. g.	July.	Eur.	8	8	8
9	Herstine.....	l.	r. ob. c.	b. s.	v. g.	July.	Penn.	10	10	9
10	Highland Hardy.....	m.	r. ob. c.	b. c.	v. g.	b. July.	Am.	8	10	8
11	Hornet.....	l.	c.	c.	g.	July.	Fr.	7	7	8
12	Kirtland.....	m.	r. ob. c.	b. c.	v. g.	b. July.	Ohio?	10	9	9
13	Montclair.....	l.	r.	p. c.	v. g.	July.	N. J.	9	-----	9
14	Naomi.....	l.	r. c.	p. r.	v. g.	July.	Am.	7	8	6
15	Orange (<i>Brinckle's</i>).....	l.	c.	o.	b.	July.	Penn.	10	10	4
16	Philadelphia.....	m.	r.	p. r.	g.	July.	Penn.	7	8	9
17	Red Antwerp.....	l.	r.	d. r.	v. g.	July.	Eur.	-----	-----	-----
18	Saunders.....	m.	r.	b. r.	v. g.	July.	Am.	8	8	-----
19	Susqueco (<i>Brandywine</i>).....	m.	r. ob. c.	b. r.	v. g.	July.	Am.	8	9	9
20	Thwack.....	l.	r.	p. r.	g.	July.	Mo.	7	8	9
21	Turner.....	m.	r.	b. r.	v. g.	July.	Am.	9	9	10
22	Winant.....	m.	r.	r.	g.	July.	N. J.	-----	-----	-----

SECTION XVIII.—STRAWBERRIES.

ABBREVIATIONS FOR THIS SECTION.

Form.		Color.	
<i>c.</i> conical.	<i>o.</i> oblong.	<i>b.</i> bright.	<i>p.</i> pale.
<i>co.</i> cockscombed.	<i>ob.</i> obtuse.	<i>c.</i> crimson.	<i>r.</i> red.
<i>l.</i> long.	<i>ov.</i> oval or ovate.	<i>d.</i> dark.	<i>s.</i> scarlet.
<i>n.</i> necked.	<i>r.</i> roundish.		

NUMBER.	NAME.	DESCRIPTIONS.							USE AND VALUE. Scale 1 to 10.			
		Size.	Form.	Color.	Quality.	Sex.	Texture.	Season.	Origin.	Dessert.	Cooking.	Market.
1	Agriculturist.....	l.	ov. c.	d. c.	v. 75.	p.	f.	11 June.	N. J.	6	----	5
2	America.....	l.	r. c.	p. c.	v. 75.	p.	m.	6 "	N. Y.	8	----	5
3	Bidwell.....	v. l.	l. c. n.	b. s.	v. 75.	s.	m.	12 "	Mich.	9	----	8
4	Black Defiance.....	v. l.	r. ob. c.	d. c.	b.	s.	f.	10 "	N. J.	9	----	7
5	Boston Pine.....	l.	r. c.	d. c.	v. 75.	s.	m.	12 "	Mass.	8	----	4
6	Boydon's No. 30.....	l.	ob. c.	b. c.	v. 75.	s.	f.	13 "	N. J.	8	----	8
7	Burgess.....	m. l.	r.	b. s.	v. 75.	s.	f.	12 "	Mass.	----	----	8
8	Burr's New Pine.....	m.	r. c.	b. c.	b.	p.	s.	10 "	Ohio.	10	----	4

SECTION XVII.—RASPBERRIES—CONTINUED.

NUMBER.	LOCALITY.					REMARKS.
	East.	Center.	South.	Southern Lake Shore.	Northern Lake Shore.	
6	---	---	---	†	†	Yet on trial. Is claimed to be identical with Highland Hardy.
7	*	*	*	*	---	Of English origin. Requires winter protection away from lake influence.
8	*	*	*	*	*	Like nearly all foreign sorts, away from lake influence must have winter protection.
9	*	*	*	**	*	May not be fully hardy in the interior of the State. Lacks firmness.
10	---	*	†	*	---	Some growers think this identical with the Kirtland. Desirable for its earliness.
11	*	*	*	*	*	Recommended at the north, but not as hardy.
12	*	*	*	*	*	Desirable early sort, requiring winter protection in exposed localities.
13	---	---	---	*	---	Suckers very little. Fine flavor. Very firm.
14	*	*	*	*	*	Some claim this to be identical with Franconia.
15	*	*	*	*	*	Must have winter protection. Unequaled for amateur purposes.
16	**	**	*	**	*	Entirely hardy; dull color; lacks quality and size. Suckers but little. A bad shipper.
17	---	---	*	†	---	Very little known in this State.
18	---	---	---	†	---	Very fine flavor. Profitableness and hardiness yet undetermined.
19	*	*	†	*	*	Its beauty, size, color, and firmness are strongly in its favor.
20	---	*	---	*	*	Strong grower; fair quality. Bears a long time on successive shoots.
21	*	*	†	*	*	Strong grower; hardy, productive. Suckers profusely. Firm texture.
22	---	---	---	*	---	Needs further trial. Of doubtful value.

SECTION XVIII.—STRAWBERRIES.

ABBREVIATIONS FOR THIS SECTION.

Sex.
p. pistillate.
s. staminate or
 perfect.

Texture.
f. firm.
m. medium.
s. soft.

Season.
The date (in June, 1879) of the ripening of the first perfect specimens is given in each case as the most convenient mode of indicating the relative season of each variety.

NUMBER.	LOCALITY.					REMARKS.
	East.	Center.	South.	Southern Lake Shore.	Northern Lake Shore.	
1	*	---	---	*	*	Size variable. Occasionally very large.
2	---	*	---	*	---	Productiveness quite variable. Lacks color. Excellent.
3	---	---	---	†	†	Does not always ripen well at the tip. Promising.
4	---	*	---	†	*	Very perfect in form. Shy bearer. Holds its size well. Excellent.
5	---	---	---	---	---	Has been much used to fructify pistillate varieties.
6	---	---	---	*	---	To produce with certainty should be grown in hills, and on moist soils.
7	---	*	---	---	---	Very prolific. Said to have originated at New Bedford, Mass.
8	*	---	---	---	---	Has long stood unrivaled so far as quality is concerned.

SECTION XVIII.—STRAWBERRIES—CONTINUED.

NUMBER.	NAMES.	DESCRIPTIONS.								USE AND VALUE. Scale 1 to 10.		
		Size.	Form.	Color.	Quality.	Sex.	Texture.	Season.	Origin.	Dessert.	Cooking.	Market.
9	Captain Jack	m.	r. e.	b. e.	v. g.	s.	f.	10 June.	Mo.	9	....	9
10	Champion	l.	r. e.	d. e.	v. g.	p.	f.	10 "	N. Y.	7	....	9
11	Charles Downing	l.	r. e.	d. s.	v. g.	s.	m.	10 "	Ken.	8	....	10
12	Col. Cheney	l.	r. e. co.	b. e.	v. g.	p.	m.	10 "	N. Y.	9	....	8
13	Cowing's Seedling	v. l.	r. ob. e.	b. e.	v. g.	s.	m.	12 "	Ind.	10	....	9
14	Crescent	l.	e.	d. s.	g.	s. obs.	s.	12 "	Conn.	6	....	9
15	Crimson Cone	m.	l. e.	d. e.	v. g.	p.	f.	18 "	Am.	7	....	6
16	Cumberland Triumph	v. l.	r. ob. e.	b. e.	v. g.	s.	m.	12 "	Penn.	9	....	9
17	Damask Beauty	m.	ov. e.	b. r.	v. g.	s.	f.	14 "	Ohio.	7	....	6
18	Downer's Prolific	m.	r. e.	b. s.	v. g.	s.	f.	10 "	Ken.	7	....	8
19	Dr. Warder	l.	r. e.	b. r.	g.	s.	s.	11 "	Am.	5	....	5
20	Duchesse	l.	r. ob. e.	b. e.	v. g.	s.	f.	8 "	N. Y.	8	....	8
21	Duncan	l.	e.	d. r.	v. g.	s.	f.	5 "	N. Y.	9	....	5
22	Early Hudson	v. l.	r. e.	b. e.	v. g.	s.	f.	13 "	Am.	8	....	9
23	Essex Beauty	v. l.	e. n.	d. e.	v. g.	s.	f.	-----	N. J.	8	....	7
24	Excelsior	m.	r. e.	d. s.	b.	s.	s.	12 "	Ohio.	7	....	6
25	Fillmore	m.	ob. e.	d. s.	v. g.	p.	f.	12 "	Am.	7	....	4
26	Forest Rose	v. l.	r. e.	b. e.	v. g.	s.	f.	8 "	Ohio.	8	....	8
27	French	l.	l. e. co.	b. s.	v. g.	s.	s.	12 "	N. J.	6	....	6
28	General Sherman	l.	r. e.	p. e.	v. g.	s.	m.	14 "	Mass.	-----	-----	-----
29	Glendale	v. l.	l. e.	b. s.	v. g.	s.	f.	16 "	Ohio.	9	....	9
30	Golden Defiance	l.	r. e.	l. s.	g.	p.	f.	14 "	Penn.	5	....	5
31	Grace	l.	r. ov.	d. s.	v. g.	s.	s.	12 "	Mass.	6	....	4
32	Great American	v. l.	r. e.	d. e.	v. g.	s.	s.	11 "	N. J.	6	....	7
33	Green Prolific	l.	r. ob. e.	b. s.	v. g.	s. obs.	s.	9 "	N. J.	8	....	6
34	Hooker	s.	ob. e.	d. e.	v. g.	s.	m.	14 "	N. Y.	8	....	4
35	Hovey's Seedling	v. l.	r. ov.	b. s.	v. g.	p.	f.	14 "	Mass.	6	....	6
36	Hudson's No. 10	v. l.	r. e.	d. s.	v. g.	s.	f.	13 "	Am.	8	....	7
37	Ida	s.	r. e.	d. r.	g.	p.	f.	13 "	Penn.	4	....	5
38	Jucunda	v. l.	ob. e.	b. s.	g.	s.	f.	14 "	Am. ?	6	....	9
39	Kentucky	l.	l. r. e.	b. s.	v. g.	s.	f.	16 "	Ken.	8	....	8
40	Large Early Scarlet	s.	r. ov.	b. s.	v. g.	s.	s.	10 "	Am.	8	....	6
41	Lennig's White	l.	r. ob. e.	w. r.	b.	s.	s.	12 "	Penn.	10	....	3
42	Longworth's Prolific	l.	r. ob.	b. e.	v. g.	s.	f.	14 "	Ohio.	8	....	7
43	Luckhurst	l.	r. e.	d. r.	v. g.	s.	f.	14 "	N. Y.	7	....	7
44	Major McMahon	l.	r. e.	d. e.	v. g.	s.	f.	14 "	Fr.	9	....	9

SECTION XVIII.—STRAWBERRIES—CONTINUED.

NUMBER.	LOCALITY.					REMARKS.
	East.	Center.	South.	Southern Lake Shore.	Northern Lake Shore.	
9	---	**	---	*	*	Exceedingly productive. Even sized, but not quite large enough, or good enough.
10	---	*	---	*	---	Seems destined to take a leading position as a market sort.
11	**	**	*	**	**	Succeeds generally as a fruit for near marketing. Plant vigorous.
12	*	**	*	**	*	Needs a little more firmness for remote markets.
13	---	*	---	*	†	One of the very finest large berries. Succeeds on very light soils.
14	*	*	*	*	*	Vigorous plant. Very prolific, but lacks quality and firmness.
15	---	*	*	---	---	One of the best for preserving.
16	---	*	---	*	*	Excellent, as a berry for home use. Very delicate flavor.
17	---	---	---	†	---	An amateur berry. Plant vigorous.
18	*	---	*	*	---	Valuable for near market. Plant vigorous.
19	---	---	---	*	---	Must give way for better sorts. Too acid.
20	---	†	---	*	---	Seems to be promising wherever tried. Valued as an early berry.
21	---	*	---	*	†	A highly promising amateur berry. Plant vigorous. The first to ripen.
22	---	---	---	*	---	Very fine for a near market. Uniformly large.
23	---	†	---	†	†	Should have hill culture.
24	---	---	---	†	---	Excellent for home use.
25	---	---	---	---	---	Valuable only to the amateur.
26	---	†	---	†	---	Promises to be one of the most valuable. Does not do well on light, dry soils.
27	---	---	*	*	---	Very productive—vigor medium.
28	---	---	---	†	---	Imperfectly tested; but very promising.
29	---	---	---	†	---	A late sort. Very promising.
30	---	---	---	---	---	Worthy of trial for market. An excellent handler.
31	---	---	---	†	---	Strictly an amateur fruit.
32	---	*	---	†	---	Appears variable. Will doubtless need good cultivation.
33	*	**	*	*	*	Berries often imperfect. Should be planted with staminate variety.
34	*	*	*	*	---	Plant vigorous. A good amateur berry. Not attractive in color.
35	*	---	*	---	---	Plant vigorous. Productiveness variable. Going out of use.
36	---	---	---	*	---	Strong plant. Very productive and even sized. Worthy of attention.
37	---	---	---	*	---	Vigorous; prolific; acid. Ripens a long time in succession. Too small.
38	*	*	*	*	*	Vigorous. Profitable when grown in hills and on strong soils. At the north this succeeds on sandy soils.
39	*	**	*	**	*	Vigorous. A good late market berry.
40	*	*	*	*	*	Nearly superseded by newer and larger varieties.
41	*	*	*	*	*	Delicious pineapple flavor. Unproductive; amateur.
42	*	*	*	*	---	Vigorous; productive; acid. Its popularity has long since waned.
43	---	---	---	†	---	Vigor medium. Suited to a near market. Has not become popular.
44	---	---	---	†	---	Stems short. Fruit beautiful, even sized, excellent.

SECTION XVIII.—STRAWBERRIES—CONTINUED.

NUMBER.	NAMES.	DESCRIPTIONS.								USE AND VALUE. Scale 1 to 10.		
		Size.	Form.	Color.	Quality.	Sex.	Texture.	Season.	Origin.	Dessert.	Cooking.	Market.
45	Marvin.....	v. l.	l. c.	b. c.	v. gg.	s.	f.	20 June.	Mich.	8	----	10
46	Matilda.....	v. l.	r. co.	b. s.	v. gg.	s.	m.	11 "	N. Y.	8	----	8
47	Metcalf's Early.....	s.	r. o.	b. s.	g.	s.	s.	12 "	Mich.	5	----	3
48	Michigan.....	l.	r. c.	p. c.	v. gg.	s.	s.	16 "	Mich.	7	----	5
49	Miner's Great Prolific....	l.	r. c.	c.	g.	s.	s.	-----	N. J.	-----	-----	-----
50	Monarch of the West....	v. l.	l. c.	d. c.	v. gg.	s.	f.	10 "	Ill.	9	---	7
51	Napoleon III.	l.	r.	b. s.	v. gg.	s.	f.	18 "	Eur.	8	----	6
52	New Jersey Scarlet.....	m.	c. n.	b. s.	v. gg.	s.	f.	10 "	N. J.	6	----	6
53	Nicanor.....	m.	r. ob. c.	b. s.	b.	s.	m.	6 "	N. Y.	9	----	7
54	President Wilder.....	l.	r. ob. c.	b. s.	b.	s.	f.	16 "	Mass.	9	----	4
55	Romeyn.....	v. l.	r. c. co.	b. c.	v. g.	s.	s.	18 "	N. Y.	7	----	7
56	Russell's Advance.....	l.	r. ov.	b. s.	v. g.	s.	f.	10 "	N. Y.	7	----	-----
57	Russell's Prolific.....	l.	c. co.	s. c.	v. g.	p.	s.	12 "	N. Y.	8	----	7
58	Scarlet Globe.....	l.	r. c. co.	s.	g.	s.	s.	14 "	Am.	6	----	5
59	Seneca Chief.....	v. l.	c. co.	d. c.	v. g.	s.	f.	17 "	N. Y.	8	----	8
60	Seneca Queen.....	l.	r. c.	b. c.	b.	s.	m.	11 "	N. Y.	8	----	6
61	Sharpless.....	v. l.	o. c. co.	b. r.	v. g.	s.	f.	14 "	Penn.	9	----	9
62	Shirts.....	v. l.	l. c.	b. c.	v. g.	s.	f.	14 "	Mich.	9	----	10
63	Springdale.....	v. l.	r. c.	d. s.	b.	p.	m.	17 "	Penn.	9	----	6
64	Star of the West.....	l.	r. ob. c.	d. c.	g.	s.	s.	17 "	Mo.	-----	-----	-----
65	Sterling.....	l.	c.	d. s.	v. g.	p.	m.	17 "	Ohio.	7	----	7
66	Triomphe de Gand.....	l.	r. ob. c.	b. r.	b.	s.	f.	12 "	Bel.	10	----	9
67	Victoria (<i>Golden Queen</i>)..	v. l.	r. c.	b. c.	v. g.	s.	m.	10 "	Eng. ?	8	----	6
68	Wilson's Albany.....	l.	r. c.	d. c.	g.	s.	f.	11 "	N. Y.	6	----	9
69	Windsor Chief.....	l.	r. c.	b. c.	v. g.	p.	f.	10 "	Mich.	7	---	9

SECTION XVIII.—STRAWBERRIES—CONTINUED.

NUMBER.	LOCALITY.					REMARKS.
	East.	Center.	South.	Southern Lake Shore.	Northern Lake Shore.	
45	---	*	---	*	---	One of the most promising very late berries.
46	---	†	---	*	---	Very promising for near market.
47	---	*	---	*	*	Has few qualities to especially recommend it.
48	*	*	*	*	*	Fine even size, but quite too soft. Vigorous, productive. Succeeds even under a hot sun.
49	---	---	---	†	†	Vigorous and productive.
50	*	**	**	**	*	Very productive. Ripens slowly at the tips. Promising for market.
51	*	*	*	*	**	Like all foreign sorts, should be kept in hills.
52	---	---	*	†	---	Plant vigorous. Moderately productive.
53	*	*	*	*	*	One of the best early amateur varieties.
54	*	---	---	*	---	Fails on light soils.
55	---	---	---	*	---	Much like Champion. Not firm enough to bear rough treatment.
56	---	*	---	*	---	Very productive. Retains its size till last pickings.
57	*	*	*	*	---	Very productive. Too soft for remote marketing.
58	---	---	---	*	---	Only moderately productive. Acid.
59	---	*	---	*	*	Very productive and vigorous. Prefers strong soils.
60	---	*	---	*	---	Continues large to the last.
61	†	†	---	†	†	Is attracting much attention.
62	---	†	---	†	*	Very rich in color and fine in quality.
63	---	†	---	*	---	May lack firmness as a market berry. Flavor superior.
64	---	---	---	†	---	Doubtful if it can realize its early promise.
65	---	†	---	†	---	May improve upon further trial.
66	*	*	*	*	*	Flavor rich, excellent. Should be grown in hills.
67	*	*	---	*	*	Flavor excellent. Must be kept in hills.
68	**	**	**	**	**	Colors early. Only good when fully ripe. Later pickings fail in size.
69	---	*	---	†	---	Cross of Chas. Downing upon Champion. Much like the latter.

SECTION XIX.—NATIVE AND INTRODUCED SPECIES OF FRUITS AND NUTS.

This section is intended to include the native fruits and nuts of the State, as well as any introduced species giving promise of value for cultivation in the open air.

NUMBER.	BOTANICAL NAMES.	COMMON NAMES.	LOCALITY.				
			East.	Center.	South.	Southern Lake Shore.	Northern Lake Shore.
1	<i>Amelanchier Canadensis</i>	June or Service Berry.....	*	*	*	*	*
2	<i>Apios tuberosa</i>	Ground Nut.....	*	*			*
3	<i>Asimina triloba</i>	Papaw.....	*	*	*	*	
4	<i>Berberis vulgaris</i>	Barberry.....	*	*	*	*	*
5	<i>Carya Alba</i>	Shell Bark Hickory.....	*	*	*	*	
6	<i>Carya porcina</i>	Pig Hickory.....	*	*	*	*	
7	<i>Carya sulcata</i>	Large or Western Shell Bark.....	*		*		
8	<i>Castanea vesca</i> , var. Am.	European Chestnut.....	*	*	*	*	
9	<i>Castanea pumila</i>	Chinquapin.....		*	*	*	
10	<i>Corylus Americana</i>	Wild Hazel Nut.....	*	*	*	*	*
11	<i>Corylus avellana</i>	Filbert.....	*	*	*	*	*
12	<i>Corylus rostrata</i>	Beaked Hazel Nut.....	*	*	*	*	*
13	<i>Crataegus tomentosa</i>	Black or Pear Thorn.....	*	*	*	*	*
14	<i>Cydonia vulgaris</i>	Quince.....	*	*	*	*	*
15	<i>Cydonia Japonica</i>	Japan Quince.....	*	*	*	*	*
16	<i>Diospyros kaki</i>	Japanese Persimmon.....				†	
17	<i>Diospyros Virginiana</i>	Persimmon.....				†	
18	<i>Fagus ferruginea</i>	Beech.....	*	*	*	*	*
19	<i>Ficus carica</i>	Fig.....				*	
20	<i>Fragaria Chilensis</i>	South American Strawberry.....	*	*	*	*	*
21	<i>Fragaria vesca</i>	Alpine Strawberry.....	*	*	*	*	*
22	<i>Fragaria Virginiana</i>	American Strawberry.....	*	*	*	*	*
23	<i>Gaultheria procumbens</i>	Wintergreen.....	*	*	*	*	*
24	<i>Gaylussacia frondosa</i>	Blue Huckleberry.....	*	*	*	*	*
25	<i>Gaylussacia resinosa</i>	Black Huckleberry.....	*	*	*	*	*
26	<i>Juglans cinerea</i>	Butternut.....	*	*	*	*	*
27	<i>Juglans nigra</i>	Black Walnut.....	*	*	*	*	*
28	<i>Juglans regia</i>	European Walnut.....				*	
29	<i>Lathyrus maritimus</i>	Beach Pea.....					*
30	<i>Lycopersicum esculentum</i>	Tomato.....	*	*	*	*	*
31	<i>Morus alba</i>	White Mulberry.....	*	*	*	*	
32	<i>Morus nigra</i>	Black Mulberry.....	*	*	*	*	*
33	<i>Morus rubra</i>	Red Mulberry.....	*	*	*	*	
34	<i>Mespilus Germanica</i>	Medlar.....				*	

SECTION XIX.—NATIVE AND INTRODUCED SPECIES OF FRUITS
AND NUTS.

NUMBER.	REMARKS.
1	A small tree. Common on dry timbered lands. The dwarf variety is more common in cultivation.
2	An edible tuber. May be found at the north.
3	Common from the latitude of Grand Rapids Southward.
4	Grown throughout Lower Michigan as an introduced plant.
5	Indigenous in the southern portion of the Lower Peninsula.
6	Common throughout the south and center.
7	Indigenous in Monroe county.
8	Indigenous growth limited. Introduced throughout the Lower Peninsula.
9	Introduced in Southern Michigan.
10	Very widely distributed.
11	Sparsely grown as an introduced plant.
12	Indigenous throughout the State.
13	An edible fruit. Often of pleasant flavor. Varies much in quality.
14	Grown successfully wherever suitable soils occur.
15	Fruit sometimes used for jellies. Chiefly ornamental.
16	Requires thorough winter protection.
17	Is hardy at the Lake Shore.
18	A valuable nut-bearing, timber tree throughout the Lower Peninsula.
19	Can only be grown with winter protection.
20	Some of our more common varieties are supposed to derive their parentage in part from this.
21	Succeeds wherever tried. Little valued as a fruit-producing plant.
22	The parent of the great mass of our popular varieties.
23	Common everywhere on cold or light poor soils.
24	Widely distributed.
25	Very widely distributed.
26	Indigenous at the south. Introduced at the north.
27	Our most valuable timber and nut-bearing tree. Indigenous south.
28	Hardy with lake protection. May succeed in the interior.
29	Found upon the shores of the Great Lakes.
30	Formerly only used for ornament, but has now become commonly grown for culinary purposes.
31	Sparsely introduced.
32	Quite common as an introduced plant.
33	A native; sometimes assuming the dignity even of a timber tree.
34	But little known. Seems hardy at the lake shore. Much prized in England.

SECTION XIX.—CONTINUED.

NUMBER.	BOTANICAL NAMES.	COMMON NAMES.	LOCALITY.				
			East.	Center.	South.	Southern Lake Shore.	Northern Lake Shore.
35	Nelumbium luteum.....	Yellow Nelumbo, or Water Chin- quapin.....	*	*			
36	Opuntia Rafinesquii.....	Prickly Pear.....	*	*	*	*	
37	Opuntia Vulgaris.....	Prickly Pear.....	*	*	*	*	*
38	Physalis (several species).....	Ground Cherry.....	*	*	*	*	*
39	Podophyllum peltatum.....	May Apple, or Mandrake.....	*	*	*	*	
40	Prunus Americana.....	Wild Yellow or Red Plum.....	*	*	*	*	*
41	Prunus Armeniaca.....	Apricot.....	*	*	*	*	*
42	Prunus Avium.....	Bird or Heart Cherry.....	*	*	*	*	*
43	Prunus cerasus.....	Red or Morello Cherry.....	*	*	*	*	*
44	Prunus Chicasa.....	Chicasaw Plum.....	*	*	*	*	†
45	Prunus (amygdalus) communis.....	Almond.....	*	*	*	*	*
46	Prunus domestica.....	Garden Plum.....	*	*	*	*	*
47	Prunus maritima.....	Beach Plum.....					*
48	Prunus (amygdalus) Persica.....	Peach.....	*	*	*	*	*
49	Prunus Pennsylvanica.....	Wild Red Cherry.....		*	*	*	*
50	Prunus pumila.....	Dwarf Cherry.....	*	*	*	*	*
51	Prunus serotina.....	Black Cherry.....	*	*	*	*	*
52	Prunus Virginiana.....	Choke Cherry.....	*	*	*	*	*
53	Pyrus communis.....	Pear.....	*	*	*	*	*
54	Pyrus coronaria.....	American Crab Apple.....	*	*	*	*	*
55	Pyrus malus.....	Apple.....	*	*	*	*	*
56	Pyrus Prunifolia.....	Siberian Crab.....	*	*	*	*	*
57	Pyrus rivularis.....	Oregon Crab.....					
58	Quercus macrocarpa.....	Burr Oak.....	*	*	*	*	
59	Ribes aureum.....	Missouri Currant.....	*	*	*	*	*
60	Ribes cynosbati.....	Wild Gooseberry.....	*	*	*	*	*
61	Ribes floridum.....	Wild Black Currant.....	*	*	*	*	*
62	Ribes grossularia.....	English Gooseberry.....	*	*	*	*	*
63	Ribes hirtellum.....	Houghton Gooseberry.....	*	*	*	*	
64	Ribes nigrum.....	Black Currant.....	*	*	*	*	*
65	Ribes rotundifolium.....	Smooth Wild Gooseberry.....	*	*	*	*	*
66	Ribes rubrum.....	Red Currant.....	*	*	*	*	*
67	Rubus Canadensis.....	Dewberry.....	*	*	*	*	*
68	Rubus Ideus.....	European Raspberry.....	*	*	*	*	*
69	Rubus occidentalis.....	Black Cap Raspberry..... (Thimbleberry.)	*	*	*	*	*
70	Rubus strigosus.....	Wild Red Raspberry.....	*	*	*	*	*

SECTION XIX.—CONTINUED.

NUMBER.	REMARKS.
35	Common along the shore of Lake Erie; also found in Kalamazoo county.
36	More or less common in rocky or sandy locations.
37	Confined to rocky or sandy localities.
38	Commonly known and treated as a weed.
39	Common in the woods and even the fields of Southern Michigan.
40	A common undergrowth on moist soils.
41	Introduced rather sparsely.
42	Its improved varieties are widely disseminated.
43	More hardy than the foregoing. Extensively introduced.
44	One of its varieties—The Wild Goose Plum—is considerably disseminated.
45	Only the hard-shelled variety is much disseminated.
46	The chief drawback to the success of this is the curculio.
47	May be found along the shores of our lakes.
48	Grown everywhere. Especially successful with lake protection and on elevated lands.
49	Indigenous in central, western, and northern Michigan.
50	A trailing shrub, on sandy cliffs or rocks.
51	Fruit sometimes good. Timber valued for furniture.
52	A common bush or small tree. Fruit very astringent.
53	Trees planted by the early French settlers are yet flourishing and productive.
54	Common everywhere in thickets and hedge-rows.
55	This seems peculiarly adapted to our climate and soils.
56	The above remark applies also to this.
57	
58	Very common on dry rich "opening" soils.
59	Widely introduced, chiefly as an ornamental shrub.
60	Common everywhere.
61	Found in moist rich soils.
62	The chief difficulty with this is its liability to mildew of the young fruit.
63	This native plant is valued for its exemption from mildew.
64	Common in low or moist rich soils.
65	Generally distributed in wet shaded grounds. Improves when transplanted to dry soils.
66	So common and successful everywhere as to almost rank as a native. Indigenous north.
67	Grows wild throughout the State.
68	Is more or less tender away from lake protection.
69	Native, and widely distributed through the State.
70	Covers most of the burnt districts of northern Michigan.

SECTION XIX.—CONTINUED.

NUMBER.	BOTANICAL NAMES.	COMMON NAMES.	LOCALITY.				
			East.	Center.	South.	Southern Lake Shore.	Northern Lake Shore.
71	<i>Rubus villosus</i>	Blackberry	*	*	*	*	*
72	<i>Sambucus Canadensis</i>	Common Elder.....	*	*	*	*	*
73	<i>Shepherdia argentea</i>	Buffalo Berry.....	*	*	*	*	*
74	<i>Vaccinium Canadense</i>	Canada Blueberry.....		*			
75	<i>Vaccinium corymbosum</i>	Swamp Blueberry.....	*	*	*	*	*
76	<i>Vaccinium macrocarpon</i>	American Cranberry.....	*	*	*	*	*
77	<i>Vaccinium Pennsylvanicum</i>	Dwarf Blueberry.....	*	*	*	*	*
78	<i>Vaccinium vacillans</i>	Low Blueberry.....	*	*	*	*	*
79	<i>Viburnum opulus</i>	Tree Cranberry.....	*	*	*	*	*
80	<i>Viburnum prunifolium</i>	Black Haw.....	*	*	*	*	*
81	<i>Vitis æstivalis</i>	Summer Grape.....	*	*	*	*	*
82	<i>Vitis cordifolia</i>	Frost Grape.....	*	*	*	*	*
83	<i>Vitis Labrusca</i>	Northern Fox Grape.....	*	*	*	*	*
84	<i>Vitis vinifera</i>	European Grape.....	*	*	*	*	*
85	<i>Zizania aquatica</i>	Indian Rice.....	*	*	*	*	*

SECTION XIX.—CONTINUED.

NUMBER.	REMARKS.
71	This, with the preceding, speedily overruns neglected or "burned over" territory.
72	A common and troublesome plant on rich or strong soils.
73	A northern plant; occasionally used for ornamental purposes.
74	Probably disseminated throughout the State.
75	A very common inhabitant of marshes or swamps. Varies widely.
76	This is very common, and especially at home in Michigan.
77	Most common on light dry soils. Widely distributed.
78	Distributed throughout the State.
79	Inhabits moist soils, especially along streams.
80	A common inhabitant of swamps.
81	Introduced varieties prove successful.
82	One of the most common and hardy natives.
83	Quite at home in this climate.
84	Will seldom succeed on account of extreme liability to mildew.
85	A native of the shallow waters of our lakes and streams.

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